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California a Paradise for the Motorist.

A State that for Diversity of Scenery and Climate has no Equal the World Over—Mountain and Valley, Desert and Fertile Plain, Ocean, Lake and River, and from Tropical Heat to Winter Snow, all Within Reach of the Tourist.

Californians can truly boast that within the borders of no other geographical subdivision of similar size, the world over, can

such a variety of scenery and climate be found. Much as has been said and written about the land of sunshine, the great bulk

of Americans have no realizing sense of the magnificence of this section of our country and its great accessibility.



PARTY OF TOURING MOTORISTS AT THE SAN GABRIEL MISSION, NEAR PASADENA, SOUTHERN CALIFORNIA.

In the 156,000 square miles of territory, with Sacramento as the capital, there are majestic mountain ranges, sprinkled with



WAWONA—ON THE ROAD TO YOSEMITE.

exquisite valleys, watered by abundant streams, and at the other extreme are waterless plains and depressions below sea level where even the cactus fights for existence. Between lies all the range of foothill and plain that under the most perfect climatic conditions give life to all that the forest and field can produce. And not many miles away is a coast line that, for miles at a stretch, is lined with beaches that neither the Atlantic coast nor the Mediterranean can excel.

In climate the range is from the furnace heat of Death Valley to the bracing coldness of perpetual snow. In fertility the lover of nature has a choice that lies between the giant redwood and the delicate Mariposa lily, the San Joaquin wheat field, with its 30 horse reapers and the minia-



FIRST GLIMPSE OF YOSEMITE VALLEY.

ture fruit ranch, no bigger than a good sized eastern garden.

To the automobilist this is all a treasure ground out of which he can pick the scenes that best suit his fancy. Many have already discovered this and more have the experience ahead of them, as delightful a one as the modern motor car can help them to enjoy. Our front picture shows a party on tour, visiting the scene of one of the old mission settlements that in Southern California give to the landscape, in places, that historic interest which so many cross the ocean to experience. And when the motorist wants to stop over in his journeys through the scenes of grandeur and beauty he can find many and convenient resting places, in some as good hotels as the largest cities contain.

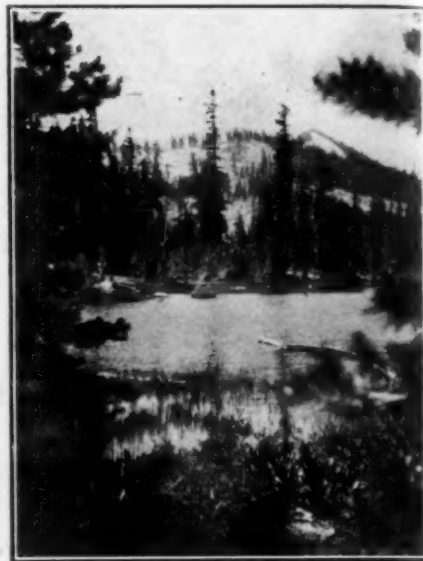
One of the side trips that is likely to be memorable is that to Santa Catalina, the isle of summer, which lies out in the Pacific about 19 miles from the port of San Pedro, the latter a short ride from Los Angeles. The view of this island which we have reproduced shows the beautifully situated little vacation town of



THE BROAD PACIFIC AT MONTEREY.

Avalon. Surrounded by hills and facing a placid bay, on which ride innumerable small craft, this town is closer to all kinds of sport than almost any other similar settlement in the country. On the sea side yachting, fishing, bathing or inspection of the wonderful submarine gardens can be varied by a short trip down the coast to the interesting seal rocks, schools of small fish leaping out of the water as the boat goes on its way, while overhead the eagles fly screaming to and from their nests on the cliffs. On the land side there are roads that will tax the hill-climbing powers of any machine. For the more venturesome there is good goat shooting to be had in the hills and for the stay-at-homes golf, tennis and other diversions. Some day, possibly, a daring motorist will make the ascent and descent of the mountain road, which is traveled each day by a coach and four that takes two hours to get to the top, and only twenty minutes

to come down. There are no stone or other fences on the jumping-off side, and in places the slightest mistake in steering



MOUNTAIN LAKE IN THE SIERRAS.

would land the machine and occupants in a twinkling several hundred feet below. As a test of nerve and hill-climbing capacity it would have no equal.

On the mainland the choice of routes and tours is unlimited. From Coronado Beach, at San Diego, up through the region of fruit and semi-tropical growths, of which Los Angeles is the commercial center, lie miles of good roads and interesting wayside scenes. Then the choice of a northward trip through the old mission country to historic Monterey and the exquisite settings of the Del Monte or the inland route through the mountain region to the big tree country and the poetic magnificence of the Yosemite Valley. After that the Golden Gate and the



HAPPY ISLES—YOSEMITE VALLEY.

El Dorado country, rich in scenic grandeur and memories of '49, with Lake Tahoe as

the goal. Even then the wonders of the State are not exhausted, for there is the hot spring region in Napa county, and northward the alpine grandeur of Shasta and scores of lesser peaks.

Even where the line of frequent travel is left there is a site for camping out at almost any point, in fact there is probably more outdoor life of this sort now enjoyed in California than in any other section of the United States.

NOTES ON RADIATORS, HOODS AND FANS IN GASOLINE AUTOS.

In the tubular coils heretofore used for moderating the temperature of gasoline motors by water circulation a core of hot water is carried around the system along the axis of the tubes and mainly the water close to the tube walls is cooled by the radiation. This imposes heavier work on the circulating pump than necessary and necessitates the carrying of a considerable quantity of the cooling medium and a special, capacious tank for this purpose. Against this condition Mr. Maybach, of the Daimler Motoren Gesellschaft, of Caunstatt, Germany devised his multitubular, or honey-comb system, by which the water is carried in thin films in a network of flat tubes braced in a frame of which the upper and lower portions are hollow and act as small water reservoirs. The interstices between the thin tubes admit the atmosphere to pass freely along the tube walls whose front edges form a plane expanse set up vertically to force the entrance of the air current. As, however,

interstices of this radiator, in which the skin friction is considerable, unless a free rearward exit and constant motion toward this exit were provided. To assure the free circulation through the interstices an exhaust fan is therefore placed back of the motor, usually forming the front of the flywheel clutch, and its revolution draws the air backward. As the



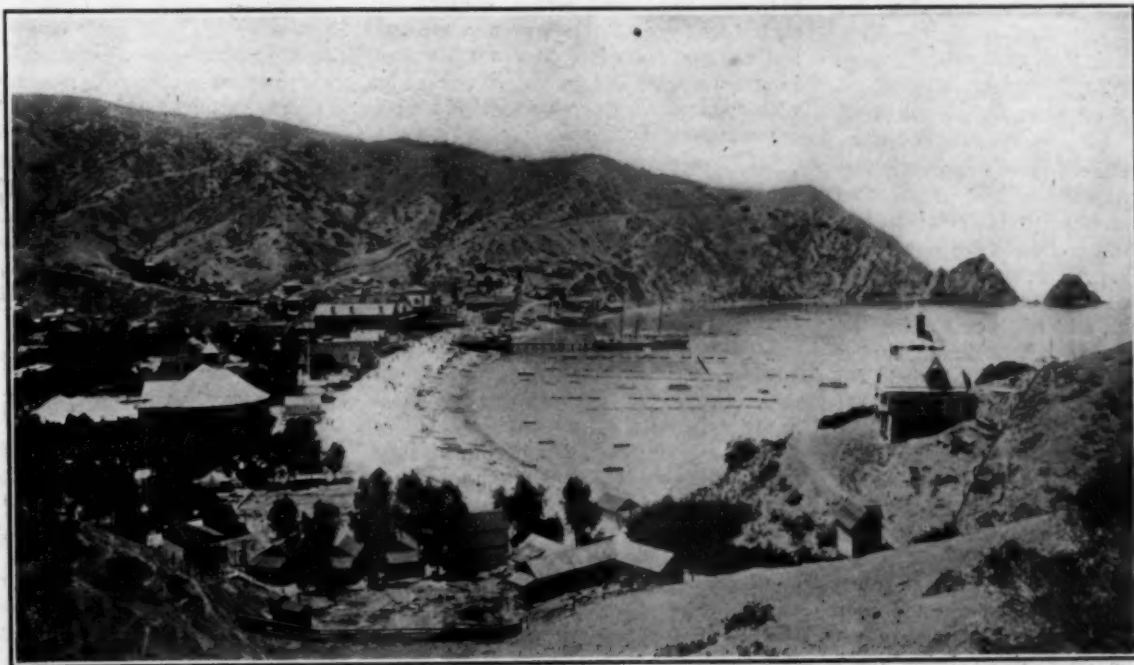
WEIGHING A TUNA AT AVALON.

motor stands in the way of the incoming current, the sides of the motor hood and its top are made solid (without the slits customary in other motor hoods), because otherwise the air might be drawn in from the sides instead of through the interstices in front which are surrounded by

modifications has been generally accepted as the best by the automobile world and is largely imitated, still contains some imperfections relating partly to the water circulation and partly to the air circulation. The thin vertical tubes braced by horizontal layers, either solid or hollow and water-filled, are somewhat liable to leakage on account of the nice soldering work required in assembling them in the frame. They are easily clogged when impure water is used or when calcium chloride or glycerine is added to the cooling water to prevent freezing. In cold weather they are more liable to freeze than tubes of larger dimensions, unless the motor is kept running and the pump action is very positive. Even when the motor is running very slowly, the tubes may freeze at very low temperatures if, for any cause, the channels are narrower at one point than at another so as to cause stagnation above the points where the flow is impeded.

FUNCTION OF THE EXHAUST FAN.

The function of the exhaust fan has been looked upon as mainly aimed at direct cooling of the motor by air current when reduced vehicle speed would otherwise make the whole cooling device less effective. But while the fan is undoubtedly most necessary when the vehicle is at a standstill with the motor running, its primary object is, as above explained, to facilitate the entrance of the atmosphere in the minute openings of the radiator. In other words, it accentuates the water-cooling, not the air cooling, and it does so proportionately to



PANORAMIC VIEW OF AVALON THE CHIEF PLEASURE RESORT OF SANTA CATALINA ISLAND.

the atmosphere follows the lines of smallest resistance in its movements, it would glance off against the air contained in the

the cooling water and where the air motion is required.

This arrangement which in various

the motor speed. It is not as effective as it should be, however, so long as the motor housing is open at the bottom and

no definite rearward outlet is provided for the current created by the fan or the vehicle speed. At a certain reduction of vehicle speed it becomes easier for the fan to draw the air from the open space below than through the radiator, if the air holes in the latter are of small dimensions and tubular (vertical or horizontal air slits are an improvement in this respect) and the current thus caused to rise from below acts to some extent as a wall barring the entrance of air along the radiation surfaces. In a similar manner, when the air drawn in by the fan has an insufficient straight rearward outlet and must be forced downward or to the sides in order to escape, eddies are set up in the housing which retard the influx of fresh air from the outside.

NEW CANNSTATT METHODS.

In accordance with this theory it is now understood that the new models of Mercedes cars, which have not yet been shown publicly will have a flooring or inverted hood under the motor, and that the only rear outlet from the housing will be through the exhaust fan.

By placing the exhaust fan directly behind the radiator a somewhat similar effect is obtained at slow speeds, but at high speeds the cooling effect is diminished, the influx of air in front of the fan being limited to that which the fan can discharge while its area otherwise acts as a hindrance to the circulation. The same objection would seem to apply, however, if there is no other rear or downward exit from the motor housing than through the fan, and, perhaps, it may therefore be taken for granted that the rumor ascribing that feature to new Mercedes cars is in some respect inaccurate.

Combined intercollegiate and interscholastic automobile meets are the latest possibility in the automobile and sporting world. A meeting of representatives of the principal colleges and preparatory schools in the East to plan for such a meet will be held in New York city sometime in March. All colleges and schools where there are automobile clubs will be invited to enter, and the club scoring the greatest number of points in all classes will be given a cup which it will hold for one year. The meet will be held under U. A. R. A. rules, and the entries will be divided into classes.

One of the incidental features of the coming Paris-Madrid race will be the contest for the Arenberg cup, open to cars of French construction using denatured alcohol of at least 50 per cent. strength. The cup will be contested over one stage of the course, not less than 300 kilometers, the competition being open to the voiture, light voiture and voiturette classes. The cup is held at present by René de Knyff, who won it over the Paris-Belfort stage of the Paris-Vienna race last year.

A Fuel Oil or Kerosene Engine.

Problems in the Construction of Stationary and Automobile Motors Studied in the Ostergren Two-cycle Engine, with Liquid Fuel Injection, High Compression and Gradual Combustion.

BY MARIUS C. KRARUP.

Despite the fact that numerous engineers and inventors have tried for years to design engines in which kerosene, heavy oil or crude petroleum could be used instead of gasoline, so as to obtain the benefit of the lower price and the higher caloric value of the less volatile and less homogeneous fluids, no engine has been produced so far by which the starting and operation were as convenient as required for portable motors, or in which the combustion was so perfect under all conditions as to avoid deposits and disagreeable odors. And for these reasons, principally, the gasoline motor is still supreme in all automobile and power boat work. As a rule the problem of substituting kerosene has been attacked in a one-sided manner with all attention directed upon the vaporizing of the fluid prior to its introduction in the cylinder. The results have always been either a heavy slow-speed motor, unadapted in various ways for automobiles, or a motor irregular in operation when worked under changeable load and at varying speed.

Recently, however, a more energetic attempt has come to light in New York through the organization of a syndicate to promote and manufacture engines designed by Oscar P. Ostergren, a mechanical engineer who has done notable work in steam engine design and in connection with apparatus for producing liquid air in commercial quantities.

Mr. Ostergren's fuel oil or kerosene engine is a radical departure from previous practice and contains features which bear upon the problems familiar to automobile engineers and to many automobile owners, and, as in France, the latest refinements in automobile engines, relating to reliability, economy and the use of alcohol fuel can be traced directly to tests and experiments with stationary motors (such as those made by Brouhot et Cie.), similar results may be expected in this country from a close study of new developments in engines primarily intended for stationary work. With this in view the following description and drawings of the Ostergren engine are presented to interested readers of THE AUTOMOBILE, although its main principle has been tried out only on a small scale and in a 11-2 horse power two-cycle Lozier gasoline motor remodeled for the purpose. It need hardly be said that all that is patentable in the construction has been protected.

The two most vital points in Ostergren's

motor are closely connected. One is the shape of the top of the piston; the other is the method of injecting atomized oil during a determinate, though short, period after the completion of the compression stroke. These two features produce gradual combustion of the fuel (very quick at that), and the comparatively slow flame propagation and generation of energy, in turn, render it practicable to use very high compression of the cylinder charge and obtain a correspondingly high power development and fuel economy. The flushing of the cylinder with atmospheric air which precedes the injection of the fuel (at the precise moment when ignition may commence) renders it possible to use the two-cycle system, giving an impulse at every down stroke of the piston, and thereby increase the power development still more, while obtaining something like steam engine effect by the equalizing of the rotative effort coupled with the sensitive throttling effect of which the fuel feed system is susceptible.

The leading thought in the conception of the engine has been that of economical efficiency, which comes so natural to steam engineers, whose achievements along these lines have formed their main aim since the first compound engine was built, and subsequently through the triple and quadruple expansion stages up to the tandem turbine type.

Incidentally, however, the Ostergren motor brings in other factors in gasoline motor dynamics which are of high importance apart from mere economy. The cleverness of the designer's conception is realized by noting the interdependence of the factors which he brings into play. Without gradual combustion the high compression (200 pounds in a 3 horse power motor and much higher in a 100 horse power motor now under construction) would be accompanied by the same drawbacks as in the Diesel motors; mainly great weight unfitting them for any but stationary work. On the other hand the high compression renders the gradual combustion possible. Probably the combustion could not be started properly or finished during the piston stroke without such high compression. In fact the high compression is the source of the ignition jointly with the raised temperature of the atomized oil (as soon as the engine has been started by electric spark), the oil being led to a feed valve through a long helical coil heated by the exhaust.

While, as said, the method of injecting the fuel at the last moment renders the two-cycle system possible by removing the chance for premature ignition, the

the fuel used in four-cycle engines would complete the formation of the explosive mixture in advance of the ignition, instead of progressively with it, and the

The neat dovetailing of these various requirements lends a peculiar charm to the Ostergren motor from an engineer's standpoint. That the whole conception also includes the use of fuel oil or kerosene, instead of gasoline and without recourse to gasoline or alcohol for starting, adds to the importance of the construction.

That shape of the piston top and of the cylinder head which is fundamental to the scheme of automatic ignition and gradual combustion, rests on an idea not entirely untried in the history of gasoline motor design but never before carried out under conditions that would work together for success. The main idea in this shaping lies not only in the capacity for heat absorption and radiation of the piston top, but also in dividing the space containing the charge into a central portion, available for immediate ignition, from which ramify compartments into which the flame can enter only in the measure as the intermixture of vapor and atmospheric air progresses. To this end the combustion chamber is conical, with the oil inlet through a small poppet valve at the apex. The top of the piston is also conical and carries a hat or funnel of the same shape supported on vertical webs which form the compartment walls. The poppet valve is held to its seat by a strong spring and opens but very little to admit the fuel, and the latter, being forced through the annular fissure, is spread in a mist over the cone-shaped walls adjacent to the valve, while, the rim of the hat radiates sufficient heat, generated by the energetic compression, to ignite the mixture which continues to form while the valve is open. Ordinarily the flame propagation is finished during one-fourth of the downstroke, but in case the oil admission is throttled it seems that it may be completed earlier, the air pockets in that case remaining inactive because the smaller oil supply produces a more quickly inflammable mixture near the valve. In this manner it may be explained that the throttling covers a wide range although the air supply and the compression are constant. On the other hand an over-supply of fuel is consumed without harmful consequences by reason of the ignition by compression, which adapts itself readily to a variation of condition of the gas, the ignition starting not in one predetermined spot—as with electric ignition—but at any point within the combustion chamber where the conditions are most favorable.

All the other special features in the motor may be considered as auxiliary to carry out the fundamental ideas of a two-cycle fuel oil or kerosene engine of highest economical efficiency. They are readily understood by reference to the accompanying cross-sectional elevations of a 50 horse power stationary engine of this type, Fig. 1 showing the piston in its

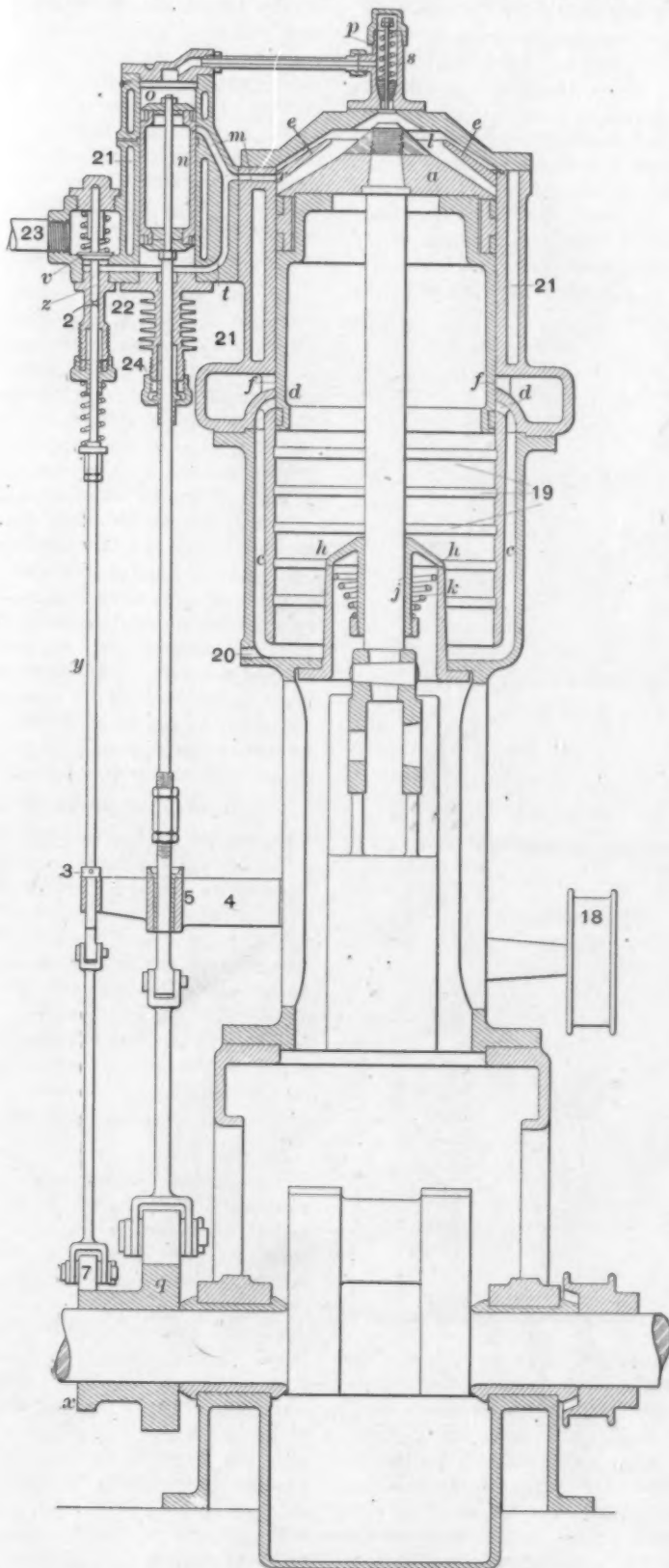


FIG. 1—Two-cycle Fuel Oil Engine with Gradual Combustion—Piston Up.

two-cycle system, in turn, is a condition for combining economy with gradual combustion, as the earlier introduction of

flame propagation would be too rapid leading to the violence of explosions which is to be avoided.

highest position and a vertical section through the axis of the engine shaft, and Fig. 2 the piston in its lowest position and the section laid at right angles with that in Fig. 1.

In these drawings the method of cylinder lubrication, the relief cock in the cylinder head and the spark plug by which ignition is obtained until the fuel has become heated by the exhaust (and the piston by the preceding explosion), are not shown.

The automobile motor designed on the same general principles has not yet been finished in all its details.

CONSTRUCTION AND CYCLE OF OPERATION.

The construction may be described concurrently with the operative movements. Let it first be supposed that the piston *a*, which is a trunk piston with piston rod, is moving up toward the position in Fig. 1 from that in Fig. 2. The method of starting the engine will be described later on. At the bottom of the stroke the atmospheric air compressed within the hollow *b* of the piston flows rapidly through the air jacket *c* and into the cylinder entering by the ports *d* which are circumferential and register with the openings between the vertical webs supporting the piston hat *e*. Entering practically at the whole circumference of the cylinder the discharge is rapid and the atmospheric air, filling the cylinder bore and compression chamber entirely, drives the burnt gases completely out through the circumferential exhaust port *f*, and from the annular conduit cast in the cylinder jacket around this port the exhaust then passes into the fuel pre-heater *g*, the nature of which is sufficiently indicated in the engraving, Fig. 2.

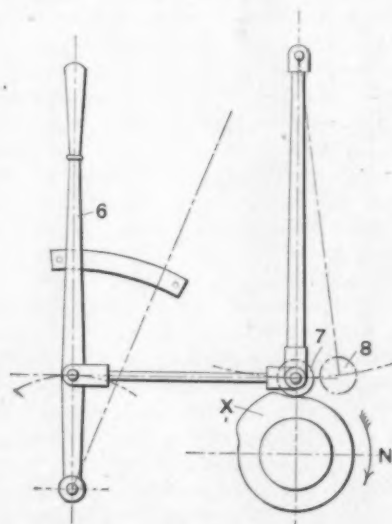
Passing upward the piston at once closes both the air inlet and the exhaust port, and the compression of the air charge begins. At the same time the suction valve *h* begins to admit atmospheric air into the lower portion of the cylinder and the hollow of the piston and continues to do so until equilibrium is brought about. The friction between the piston rod and the tubular suction valve stem *j* assists to keep the valve open during the upstroke, but the resistance of the valve spring *k* more than offsets this, so that the full air charge at the end of the stroke is at somewhat less than atmospheric pressure and, when subsequently compressed by the downstroke, reaches only about seven pounds above atmospheric tension. Some variation in this may be effected by regulating the suction valve spring *k*, and thereby the expulsion of the exhaust gases may be made more or less energetic. The compression in the combustion chamber *l* depends, of course, upon the proportions between the volumes of the various cavities, granting that the air first enters above the piston at atmospheric pressure.

If it should be desired to lower the working compression below the normal,

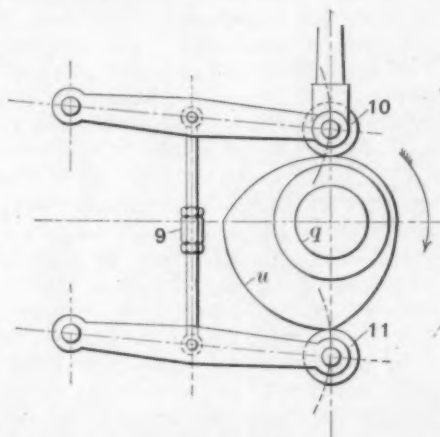
for experimental purposes, it may be done by strengthening the suction valve spring, provided the fit between piston rod and valve stem can be made sufficiently tight without creating two much friction.

THE COMPRESSION STROKE.

Moving up above the ports part of the air charge enters through the canal *m* above the piston *n* in the auxiliary compressor *o* and communicates with the fuel valve chamber *p* until the auxiliary piston is moved up, by the cam *q* and closes the inlet from the main cylinder. This closing takes place when three-fourths of the upstroke of the main piston has been completed, the action being determined by the



STARTING LEVER AND CAM.



AUXILIARY COMPRESSOR CAM MOVEMENT.

shape of cam *q*. Up to a certain point the air pressure in the valve chamber is thus equal to that in the main cylinder. Now, while the main piston goes on compressing its charge and finally closes the inlet, as shown in Fig. 1, at *r*, the auxiliary piston at the same time is pushed up with a very rapid motion and compresses the air in the fuel valve chamber still more rapidly, so that at the completion of the upstroke of the main piston and midway in the upstroke of the auxiliary piston there is a surplus of pressure in the fuel valve sufficient to open this valve against

the combined resistance of its spring *s* and the compression in the main cylinder. The drop of fuel oil which is in the valve chamber, as subsequently explained, is hereby forced into the combustion chamber, and this action continues with increasing force while the auxiliary piston completes its upstroke, the force being sufficient to hold the valve open in spite of the pressure arising from the combustion, which begins immediately (but progresses comparatively slowly) when the fuel is first admitted, at or very near the top position of the main piston.

FIRST FOURTH OF DOWN STROKE.

As may be seen by reference to the shape of the cam *q*, Fig. 3, the auxiliary piston does not finish its upstroke until the main piston has already descended one-fourth on its downstroke, and all this time fuel is forced in through the valve, or at least until the pressure from the progressive combustion becomes sufficient to keep the valve closed.

It will be noticed that the work demanded of the cam is moderated, first, by putting three-fourths of the cylinder pressure on the fuel valve from within (thereby reducing dimensions and stroke of the auxiliary piston) and, secondly, by admitting the compressed air under the auxiliary piston as well as over it, through the canal *t*, and by continuing to admit air under this piston, after it has started up and closed the upper inlet.

MIDDLE HALF OF DOWNSTROKE

During the middle one-half of the main piston downstroke the auxiliary piston remains up, as the portion of the cam now operating is a 90-degree circular arc, *u*, Fig. 3, but a small portion of the working gases of the engine escapes through canal *t* and enters by valve *v* into a compressed-air receiver which is used for starting the engine. When this receiver is already charged, however, its own pressure keeps the valve *v* closed.

THE STARTING MECHANISM

As the gases enter hot into the receiver and are subsequently cooled and contracted, there seems to be reason to expect occasional popping of this valve, even after the engine has been running for some time, if the conditions of temperature surrounding the receiver are not uniform. The pressure in the receiver should be high enough to drive the main piston down in one of the cylinders of a two-cylinder engine against the resistance of the air under the piston and also to raise the piston in the other cylinder and produce the working compression in it, so that ignition will take place in this other cylinder even with a cold charge of fuel oil. Unless this is accomplished the engine can hardly be said to be self-starting. With a single-cylinder engine—which is not contemplated by the designer, by the way—starting by this means would be more difficult, as the air from the receiver

would have to drive the piston down and again up by the momentum of the fly-wheel (not shown), but the start can, of

momentum can be gained by leaving the relief cock (not shown) in the top of the cylinder, or cylinders, open during the

admission of air is accomplished by raising the valve *v* by means of cam *x*, which actuates the rod *y*, which in turn raises valve stem *z*. The rod ordinarily does not quite reach valve stem *z*, the gap between them being noticed at *2*; this arrangement prevents the receiver valve from reciprocating the rod and causing noise at *3*, where the rod is supported in a guide bracket *4*. The latter also carries an intermediate bearing *5* for the auxiliary compressor piston rod.

Fig. 4 shows the starting lever *6* by which the lower end of the starting rod with the roller *7* may be brought in line with the cam *x*, so that the rotation of the engine shaft will raise the rod. Ordinarily this rod is out of action, as shown in dotted lines in Fig. 4 at *8*.

This whole starting mechanism, in the form shown and described, is manifestly intended for stationary engines only, where it may do very well, and may even be supplemented by a link motion for reversing the engine. But for an automobile engine two cylinders would be a necessity and a provision would be required for raising the starting valve without first rotating the engine shaft in whatever initial position of the pistons.

It is observed that the compressed air (unstable gas) in the receiver cannot be admitted to the cylinder through canals *t* and *m* when the piston is at dead center, the outlet *r* at that moment being closed. The piston must be carried past the dead center before the air is applied, and reference to the cam as drawn at *x*. Fig. 1 also shows that the starting lever is not intended to be actuated until the piston by other means has more than half completed a downstroke.

LAST FOURTH OF DOWN STROKE.

In the description of the cycle of operation of the engine the main piston was left three-fourths down on its power stroke. Simultaneously with the last one-fourth of this stroke the auxiliary piston begins to move down, again actuated by the double-acting cam (see Fig. 3). By means of the union nut *9* the cam action may be so nicely adjusted that either the upper roller *10* or the lower roller *11* is always in contact with the cam, making the movement positive and noiseless.

At the end of the main piston downstroke the auxiliary piston is in the same place as at its beginning, namely, as shown in Fig. 1; and in getting into this position it performs the important function of drawing a drop of oil into the fuel valve chamber *p* by creating a partial vacuum in the latter. The arrangement serving this purpose is indicated in Fig. 2. The fuel tank feeds the oil by gravity or pressure into the coils of tube in the pre-heater *g*, raising it to at least equal height with the three check valves *12*, *13*, *14*, which prevent the oil once fed to them from flowing back under the pressure created during the upstroke of the main pis-

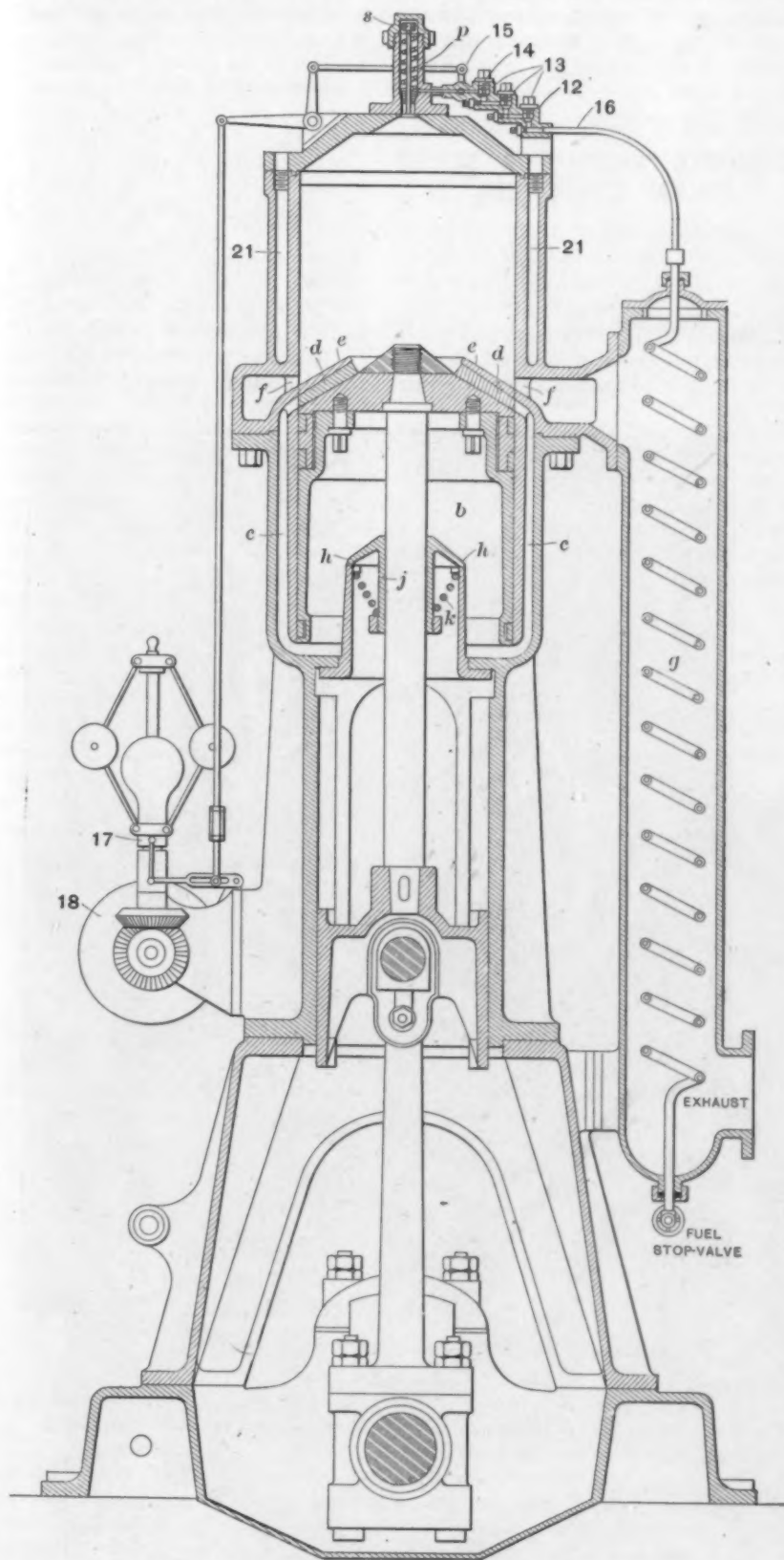


FIG. 2—Two-cycle Fuel Oil Engine with Piston Down.

NOTE.—The letters *dd* which should mark the port openings from *cc* into the combustion chamber under the piston hat *ee* are misplaced in the engraving, having the appearance of making the vertical webs support the piston hat.

course, under all circumstances be facilitated by cranking the engine shaft, and

first part of the operation, that is, until the air from the receiver is let in. This

tion and during the ignition period. Fig. 2 shows a governing valve 15 between the check valves and the fuel valve chamber *p* (which is the suction and distributing medium), but in reality the governing valve, which is a simple pet cock, is placed behind the check valves, as at 16, this arrangement leading to more accurate feed by stopping back pressure from the distribution valve *p* nearer to the oil inlet in the latter. The governing valve is regulated from the centrifugal governor 17, Fig. 2, which is actuated from the engine shaft by pulley and belt 18, Fig. 1, and is also regulated by hand. In the experimental engine this method of throttling direct on the liquid fuel oil has given a wide range of power development under accurate control, although it offers no means for advancing or retarding ignition, and at this point lies one of the most prominent features of the Ostergren system for the automobile industry, as the method would seem to lend itself to any fuel, which might prove preferable to fuel oil if the high compression employed in the stationary engine is not found equally practicable for automobile engines of smaller size.

CYLINDER LUBRICATION.

Lubrication of the cylinder presents few difficulties, as a surplus of lubricant could not produce premature ignition of the explosive charge. A British variety which ignites at about blue heat (750 degrees) is used and is fed to the oil grooves 19 noticed in the lower portion of the cylinder wall, from three dripcocks placed 120 degrees apart around the circumference, but not shown in the engravings. They operate when the main piston is at the top of the upstroke and the air pressure under the piston is somewhat less than atmospheric. At the bottom of the cylinder air jacket *c* is seen a drain 20, screw-threaded for a cock, through which a superfluity of lubricant may be let out.

COOLING WATER UNNECESSARY.

The drawings show a water jacket, 21, for cooling the upper portion of the cylinder and this extends also around the auxiliary compressor, but in smaller engines it is considered unnecessary to employ cooling water, as the complete scavenging of the cylinder with fresh air at each upstroke serves the purpose of moderating the temperature sufficiently for an engine in which the explosive charge cannot be ignited before the proper moment. The piston rod for the auxiliary compressor is cooled by radiating fins, 22, and leakage along the rod of the hot gases which pass to the receiver pipe by 23 is prevented by the stuffing box 24. This precaution is also observed with the rod *y* actuating the starting valve *v*.

One of the reasons for using a piston rod and the customary steam engine construction in connecting it with the engine shaft is to avoid air compression in the

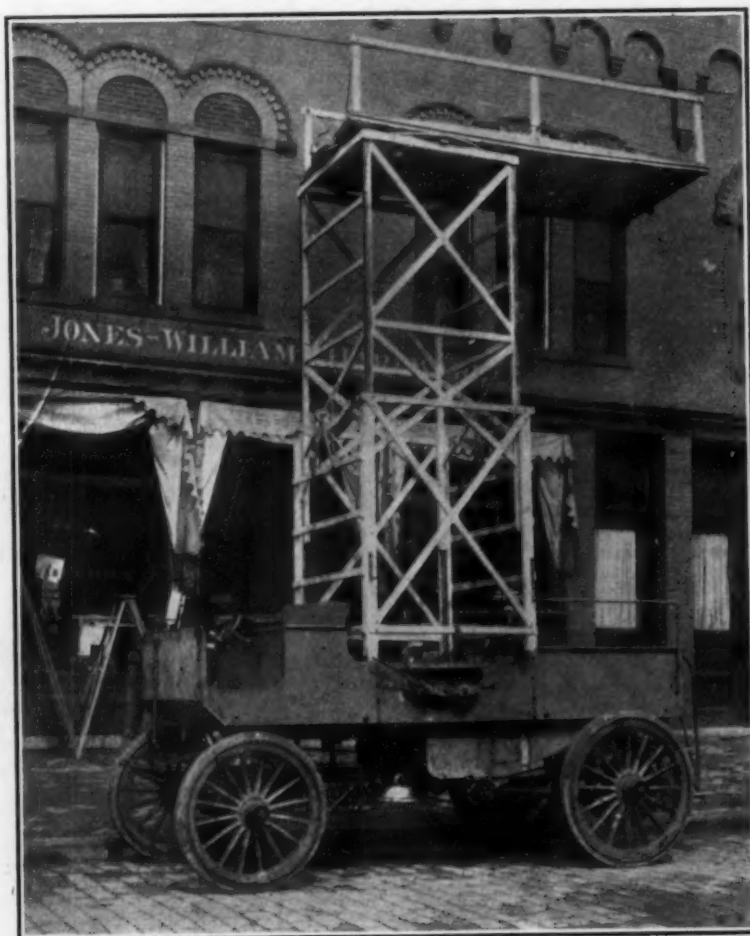
crank chamber, a feature which in other two-cycle engines causes the lubricant to ooze out at the shaft bearings, but this arrangement, of course, makes a much longer engine than is ordinarily used in gasoline motor boats or automobiles where a trunk piston operates the crank pin direct by the connecting rod.

AUTOMOBILE WAGON FOR STREET RAILWAY REPAIR WORK.

An automobile repair wagon for emergency work, specially on electric trolley roads, is shown in the engravings of a wagon used by the Columbus Railway Co., of Columbus, Ohio. The table and tower with which the wagon is equipped are similar to those used on horse-drawn repair

nished by a powerful four-cycle water-cooled gasoline engine. It is transmitted to the wheels by the company's special transmission gear which is modeled on the familiar expanding pulley system. Control of the speed changing mechanism is maintained by means of a small wheel placed at the driver's hand. In operating this wagon, the speed is absolutely under the control of the operator, there being no sudden jumps from one fixed speed to another, but rather a gradual increase or decrease of speed. This arrangement makes the control of the wagon very simple, the operator having, in addition to the steering devices, only a single lever and the speed wheel to look after.

The tower is familiar to all street railway men and to others also who have seen



STREET RAILWAY REPAIR WAGON WITH PLATFORD RAISED.

wagons, and the new motive power has the immense advantage of being under absolute control, not only when in motion, but, what is just as important, when the wagon is at a standstill and men are at work on the overhead wires. There is no danger of sudden movement due to restive horses or runaways.

The mechanism of the running gear of the wagon is practically the same as used by the Motor Truck & Vehicle Co. on all the delivery wagons and heavy passenger vehicles they build. The power is fur-

them in use. It was supplied by J. R. McCardell & Co., Trenton, N. J.

Numerous cases of "automobile squint" which is said to be auto-car ailment corresponding to the "bicycle face" have been treated in Europe. Medical experts declare, however, that in spite of the tense look which is brought to the face from continually looking ahead for objects in the way, the rider hardens his facial muscles and thus acquires a youthful appearance.

Interesting "Outside" View of Motoring.

A Warning to Tinkering Legislators in the Strangling of the Automobile Industry by Oppressive Legislation in England in the Last Century.

From the solitary motor bicycle of Gottfried Daimler, cavorting about the streets of a German provincial town, to a dissertation on "modern motor cars," occupying thirty pages in the *Edinburgh Review*, is a stretch of progress that few industries could show in the same number of years. In 1885 the German forerunner of the motor car venturing the criticism of incredulous bicyclists, and in 1903 the conservative and critical British review expressing its wholehearted commendation in such words as these: "The peculiarity of the motor car is that it can go wherever there is a road at all, and literally makes rapid locomotion a house-to-house affair. That is to say, every one who can afford it—whether for purposes of business or pleasure—now has at his disposal a thoroughly trustworthy machine which will carry him wherever he likes, at half an hour's notice, and at an average speed which, were it not for legislative restrictions, might be estimated at twenty miles an hour with entire safety on ordinary country roads. The

and a competent driver, and its up-keep costs considerably less than that of the number of horses which would be required to do its work."

As we might expect, it is the broad principles that underlie motorism, chiefly, that attract the attention of the reviewer, who has as a text several recent foreign publications on motor vehicles and the good roads movement.

The treatment of the subject is not of the "he that runs may read" style, but there are, nevertheless, many points made by the reviewer that are worth repeating. As becomes a philosopher, he has, in spots, a fine disregard of technical accuracy of details, though for that matter so has many a practical manufacturer in the preparation of his publicity literature.

SCHOLARS AS READERS.

Some degree of scholarship is presupposed in a reader of the venerable *Edinburgh Review*, and in this respect the reviewer is courteous to the point of flat-tery, as he employs English, alleged

ness of the modern movement, or renaissance of the mechanical road carriage, in his own little island, is recalled in his prefatory statement that "it is just over six years since the use of motor cars on English roads was legalized by the Light Locomotive act of 1896, which removed the oppressive restrictions imposed on all such vehicles by the ill-advised legislation of 1861 and 1865." The antiquity of the notion of self-moving carriages, on the other hand, gives the reviewer a chance to dip into the classics. "Every one will recall," he says, "the wondrous tripods with which Vulcan furnished his heavenly palace:"

Χρυσέα δὲ σφ' ὑπὸ κύκλῳ ἑκάστη πρυμνὴν θῆκεν,
Ὅφρα οἱ αὐτόματοι θεῶν δυσαίῳ ἀγῶνα;
Ἦδ' αὖτις πρὸς δῶμα νεοῖστο, θαῦμα ἰδίσθαι.

which being interpreted in plain United States, reads:

Golden wheels too he put underneath each one,
that of themselves they might go to the meeting-
place of the gods, and again return home—a won-
der to behold.

We here confess that the only tripods we can now recall are those of the camera fiend whose name is Legion, and who is responsible for those wonderful family groups in motor cars that thoughtful manufacturers and selling agents cause to be graven on metal for presentation to editors as "stuff to fill the paper with."



TROLLEY LINE REPAIR MOTOR CAR IN USE IN COLUMBUS, OHIO—WITH PLATFORM DOWN.

motor does not tire, its liability to go wrong is now reduced to an almost negligible minimum in the case of a good car

American, Greek, Latin, French and Italian to express his ideas with accuracy, and does not attach a glossary. The new-

"Probably a learned anthropologist could furnish variants of the myth from Maori, Zulu and Ojibbeway (if the reviewer would

extract the "be" from the midst of the latter, the Indian would look more comfortable in type) folklore." We suggest that the anthropologist should also discover who first thought out the principle of the Krebs' carbureter and a lot of other motor miscellanias in dispute.

FIRST MECHANICAL CARRIAGE BUILT.

Less than 100 years have elapsed since the death of the first man who, as far as is known, actually constructed a mechanical carriage, though a patent for a horseless carriage was taken out in England as early as 1619. France, the reviewer recalls, has the honor of contributing the first motor car to the collection of to-day. "Nicholas Joseph Cugnot, an engineer officer in the French Army, constructed a three-wheeled steam carriage, for which the Duc de Choiseul provided the funds, in 1769. It is still to be seen in the Conservatoire des Arts et Métiers, at Paris, a queer little ramshackle affair, which wins the visitor's respectful admiration as the precursor of both the express engines and the elegant motor cars of to-day." Verily the reviewer must be a Brobdingnagian. That the Cugnot carriage is "queer" according to tonneau type standards there can be no manner of doubt, but if it is "little" our tailor has for years deceived us. Our recollection is that the carriage would make H. W. Whipple's celebrated '02 reliability run Packard car, with the barrel hubs, look like a baby carriage, were they placed together. In fact the really wonderful Cugnot car recalls nothing so much as the huge skeleton trucks used in large cities to haul the largest sections of structural steel, suspended from chains from the backbone of the truck. It could hardly be called "ramshackle" either, as it looks sound enough to last a few centuries more, and the workmanship of the engine parts (it is a reciprocating engine without crank) is really amazingly fine, considering the rough shop methods of the time and for long afterwards. Its position in the chapel building of what was once the home of a religious order, is indeed a fitting site for this monument to a great mechanical engineer, and no automobilist stopping in Paris should fail to visit this shrine on the Rue Saint Martin. There is satisfaction in knowing that the good intentions of the inventor, which for various reasons came to naught, were finally recognized by Napoleon to the extent of a pension of 1,000 francs.

ROAD CARS COMMON LAST CENTURY.

In England, cars were common on the roads, as early or as late, whichever way you look at it, as the first third of the last century. Trevithick, the clever Cornish mining engineer, carried a load of passengers in a steam road carriage in the year 1801, and the locals called it the "puffing devil," so that the man here who first characterized the modern road wagon

as the "red devil" is not original by a hundred years or more.

People were not in such a hurry in those days, however, and Trevithick went out of the automobile business because "the force of public opinion was too strong for him." Some of the opposition must have emigrated to the United States, and possibly settled in Massachusetts, Jersey and Connecticut, where autophobia exists in a severe form in the legislatures, and can be readily diagnosed by a copious verbal frothing at the mouth. The sufferers bark also, and some charitable rubber manufacturer might furnish them with pneumatic tires to bite on.

Following this period of first demonstration, English inventors were not satisfied smooth wheels would do, and so invented many weird machines with iron legs and feet, "which propelled the carriage by alternate kicks against the ground." Times change, certainly, for nowadays it is the habit of the rural population to kick against the machine.

A steam carriage service in 1831 between Gloucester and Cheltenham covered about 4,000 miles in four months, and carried about 3,000 passengers without accident—we hope the Westerly, R. I., steam carriage venture will bust that record.

An inventor of the period also claimed to have traveled at the rate of 32 to 35 miles an hour between London and Southampton, and ascended a grade of 1 in 6 at the rate of 16 1-2 miles an hour. This performance was before the days of the pneumatic tire and, as the reviewer says, "would look well in a modern trial of touring motor cars." Perhaps he was thinking of the speed limit on the late New York-Boston run.

UNTIMELY DEATH OF MOVEMENT.

Vested interests and prejudice killed the motor car movement in those days. The horsey country squire, the stage coach owners and the railways united in influencing adverse legislation and an act restricting the speed of mechanically propelled vehicles to four miles an hour on country roads and two miles in cities was passed by Parliament in the sixties, ending the first chapter in the history of motoring.

With the raising of the speed limit to twelve miles an hour in 1896 the modern development of the British industry began. It moves the reviewer to say, "This chapter of history affords a very instructive lesson as to the injury that we may do to posterity by ill-considered handling of the motor problem now looming in the near parliamentary distance," a statement that applies with equal force in some sections of our own country.

"The discoveries of the English pioneers fell into complete oblivion, and a large number of them were rediscovered after costly experiments by the modern workers at the subject." This is apparently a constitutional peculiarity of the inventor class the world over, and the insularity

of the Britisher no doubt accentuates it in his case. Only recently our Paris correspondent, after a tour of the Crystal Palace show, wrote that "an inspection of the exhibits would lead one to suppose that the majority of the British makers knew nothing of what had been done in the past and had never even seen an up-to-date French car."

OUTSIDERS' VIEW OF THE MOTOR CAR.

The mental attitude of many educated persons is explained by the reviewer, who says, "every one has some notion of the working of a steam engine, though the petrol motor is still a noisy mystery to the man in the street." He hopes that "this state of ignorance will not long persist and that cultivated people will soon think it is as ignominious to be ignorant of the main features of a motor car as they now do to confess a total lack of acquaintance with the points of a horse."

The reviewer then takes up in turn the steam, the gasoline and the electric automobile, and in clever, if not strictly accurate generalizations, discusses the fundamental and structural differences of the several forms of motor. For the steam he selects as types the Locomobile and the Serpollet, and thus, perhaps, unintentionally concedes the fact that America and France lead in steam motor car construction. His commendation of the Serpollet flash boiler is certainly original. "Clearly there can be no chance of explosion," he says, "and the tubes are intended to be burnt." The gasoline car seems to be as much of a mystery in detail for him as for "the man in the street," for he reconstructs the machine thus: "An ordinary piston is connected by a crank with the driving axle, which also carries a heavy flywheel to help the engine through that part of the cycle in which it is doing no work."

Most owners of gasoline vehicles realize that there is a crank (not the crank referred to, of course) which they often feel rather foolish in turning, organ grinder fashion, to the edification of an encouraging group of pedestrians when the car balks in a city street.

MATTERS OF OPERATION.

As to operation: "A steam engine is very interesting to the mechanically-minded owner, and such a car as the Locomobile responds more thoroughly to the skilful driver than any petrol engine"—praise from Sir Hubert. Yet the "petrol" car is nearly "fool proof," and "the experience of such a car as the Oldsmobile shows that the noise of the exhaust can be practically extinguished." Many hold that the future lies with the electric car, and "there are continual rumors that Mr. Edison has invented a new and light accumulator, but hitherto nothing has come of them." Apparently the preposterous statements regarding this battery that have been current here for more than a year, have become mere wireless, or,

rather, spineless, rumors in crossing the ocean. Here the unofficial statements regarding the capacity of the battery and cheapness of the vehicle in which it was to be marketed, have done more to hinder sales of actual reliable cars than any other one influence. One is often tempted to offer the suggestion of "put up or shut up" to the interested parties, for so far they have done neither.

Space prevents a more extended notice at this time of the forecast of the future in automobilism, and the common sense suggestions regarding legislation, which the document contains. They are interesting reading and informing, too, and in many respects the document is a gain to automobiliana.

Imaginary New York-Chicago Race.

A story, emanating from Chicago, appeared in several New York newspapers last week to the effect that a go-as-you-please automobile race from New York to Chicago was to be held in August under the joint auspices of the Automobile Club of America and the Chicago Automobile Club. According to this interesting tale, the start would be made in New York and the automobiles participating were to be run at the driver's discretion for the entire distance, the first car crossing the tape at Chicago winning. It was further announced with much confidence that Dr. Frank G. Davis, chairman of the committee of runs of the Chicago Automobile Club, had been in communication with Chairman John A. Hill, of the contest committee of the A. C. A., and that Dr. Davis had announced that the race was assured. The rules for the contest, the story went on, and the call for entries would be issued in about two weeks.

Chairman Hill, when interviewed by a representative of THE AUTOMOBILE concerning this report, said it was a newspaper fake, and declared emphatically that there was "not a word of truth in it." He said that he had not been in communication with Dr. Davis relative to such a race, and that the Automobile Club of America was not going to hold a race of any sort in August, although it would probably have a contest again in October, as in 1902. Further, Mr. Hill declared the Chicago story worse than a fake in that when a press dispatch carrying all these ingenious details came over the wire from the Windy City, he had been called up by telephone by a New York newspaper and asked if the story was true. He declared that it was a fake, but the story appeared in the next morning's paper just the same.

Representatives of the International Electric Motor Vehicle Co., of Jersey City, have been investigating property at Water-side, a suburb of New Haven, Conn., with the idea of removing the company's plant there.

Foreign

MOTOR BUSES IN PUBLIC SERVICE ON FRENCH ROADS.

SEE-SAW 'TWEEN STEAM AND OIL.

Two Electric Timing Apparatus Out of a Dozen Found Serviceable by Test and to Be Used for Short Distance Races—Serpellet's New Buses Show Fair Economy With Heavy Load.

Staff Correspondence.

PARIS, March 4.—When the question of heavy transport first came to the fore in this country makers firmly believed that the future would be with steam, for it was accepted as an article of faith that the gasoline vehicle would never be suitable for loads of more than a ton. Beyond this steam must be the predominant power. Consequently we had any number of steam wagons and omnibuses, such as the Serpillet, the De Dion, the Le Blant and the Chaboche, but unfortunately so far as freight wagons are concerned it is found that there is no hope for the economical use of steam unless the trucks can carry loads of five tons and upwards with a tare of not more than three tons. The services of the De Dion steamers were a failure; Le Blant dropped out of the trade altogether, and M. Serpillet temporarily abandoned the freight wagon for the pleasure carriage. They found themselves threatened for some time by the develop-

extensive employment on account of the comparatively high cost of up-keep. Now the makers of steam wagons are beginning to tackle the question once more, one of the most enterprising of them being M. Turgan, who is trying to deal with loads up to ten tons. He ran a big tractor with a train of artillery wagons from Paris to Nice last March, and as the result of this performance he has sold several vehicles, principally to the millers at Marseilles who were particularly struck with the convenience of steam traction.

M. Serpillet is now again turning his attention to this phase of automobilism, in which he thinks there is an enormous trade to be done in the future. At the Paris show he exhibited a new type of omnibus which has been built for a school here. It has a 12 horse power engine, and the chassis has the latest improvements, with a Stephenson link gear to replace the stepped cams which formerly varied the travel of the oil and water pump plungers. Another novelty is the placing of the generator in front of the vehicle instead of at the back, as is the case in all the old Serpillet cars, and this has been done to allow of passengers entering the bus from the rear. The kerosene fumes are carried away by a chimney on the roof of the vehicle. The wheels are shod with Michelin tires, the back ones having a broad thickened tread.

Since the show the omnibus has been doing good service and has given such excellent results from the point of view of economy that M. Serpillet took it on a



SERPILLET STEAM OMNIBUS ON TRIAL RUN—PARIS TO MELUN.

ment of the gasoline truck, which began to carry loads of two and three tons, while G6bron-Brillie have even built a wagon for a five ton load. The results are certainly good so far as concerns the facility for transporting heavy loads, but they can hardly be said to have come into

trial run from Paris to Melun and back, when he invited the staff representative of THE AUTOMOBILE to accompany him. The course covered a distance of exactly 62.1 miles. At Vincennes the kerosene tank was filled up and sealed, and the omnibus, with eleven passengers, proceeded

to Melun. It was a very cold and raw day, with the roads heavy with mud on account of a thaw following a severe frost, but nevertheless the vehicle ran with remarkable regularity, the only stoppage being one of a minute at the request of a passenger. The hills were taken at a good pace, except occasionally on the tops of big gradients, when the speed dropped, but despite the thick mud the vehicle did not meet with the slightest difficulty. On the return journey the omnibus had thirteen passengers. The time for the 62.1 miles was 3 hours 26 minutes, the home journey taking less than a minute more than the outward run, and this is really a remarkable testimony to the regularity of the vehicle. The consumption of kerosene was 56 liters, so that at the price the oil sells outside Paris the cost of fuel of transporting each passenger the full distance was only 28 cents. The weight of the omnibus in running order with fuel and water was 4,840 pounds, while with a load of twelve passengers it was 7,040 pounds. No account was taken of the water consumption which M. Serpollet declares to be a liter per mile, and certainly, seeing the bad conditions under which the test was run off, the consumption of kerosene must be regarded as the maximum on country roads.

TIMING FOR SPEED RECORDS.

A few months ago the sporting commission of the A. C. F. announced that no more mile and kilometer records would be accepted unless they were timed with an electrical apparatus, but as it was doubtful whether these devices were sufficiently reliable the commission revoked the new rule until such time as they could carry out tests with the different installations. With the speeds at which automobiles are now driven, up to even eighty miles an hour on the mile stretch, the old systems of timing are utterly useless. The fifth of a second has become an appreciable measure of time during which a record breaking vehicle will travel ten yards and more. Now it has become an established fact that a man cannot time accurately to the fifth of a second. This is the contention of the well-known professor of electricity, M. Hospitalier, and others, and in a conversation the other day with a maker of chronometers he told me that it always made him smile to see cars timed by the fifth of a second, because the chances are that the ratchet would be on the point of the tooth of the seconds wheel, and more than that, no man can stop the watch to a fifth with absolute accuracy. If it is doubtful whether a man can time to a fifth it is evidently an impossibility that he should be equal to dealing with tenths, and this is what automobile timing has now come to.

The commission has carried out tests this week with a number of timing instruments on the record track at Dourdan. Eight devices were submitted, some of

them of a very ingenious construction and timing up to the hundredth and even thousandth of a second, but with only two exceptions they were all seen to be of an impracticable character, chiefly because their construction is much too delicate. The only two that could be accepted by the commission for adoption were the electrical apparatus of M. Pottier, an engineer at the Mors Works, and the mechanical device of Chevalier von Stralsec, which was employed at Vienna at the time of the Paris-Vienna race last year. The apparatus of M. Pottier, known as the Mors, provides a strip of paper which unrolls as in the case of the Mors telegraphic instrument. The watch has an electrical arrangement by means of which each movement of the seconds hand breaks contact and a needle pierces the paper for each fifth. When a car crosses the line another break of contact makes a hole distinct from the seconds marks, and this is repeated when the car crosses the finishing line. Thus, between the two marks the seconds can be read off, and the position of the two holes between the fifths is accurately ascertained to the fifth of a second. Of the \$200 prize the Mors apparatus is awarded \$120 and the rest is given to Chevalier von Stralsec for his chronometer, which records the time by a pen. This latter, however, has the disadvantage of being costly. It has nevertheless been accepted by the commission, so that henceforth the mile and kilometer records will have to be timed with one of these two instruments.

DETAILS AND VIEWS OF NEW CARS ADMIRIED IN ENGLAND.

Staff Correspondence.

LONDON, March 2.—The illustration of the Wolseley 40 horse power racing car

some of the continental competitions this year.

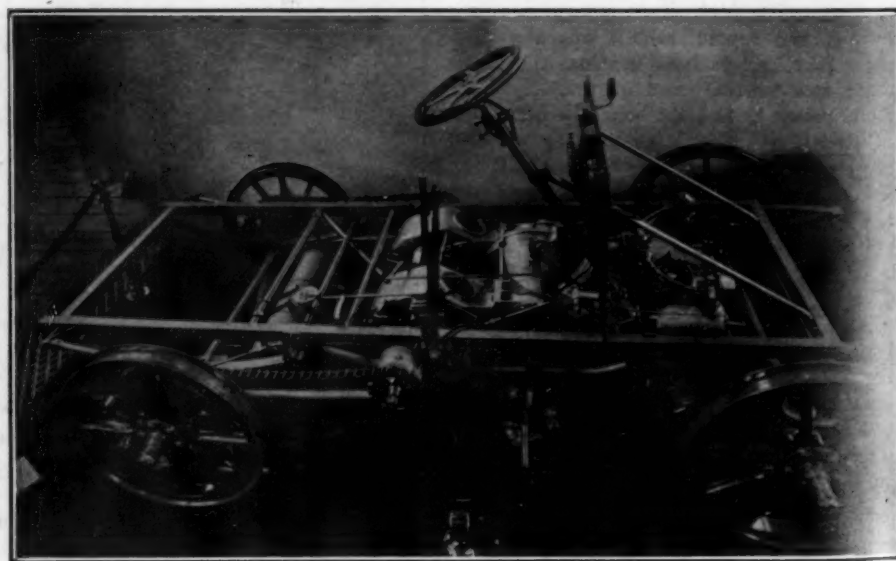
As will be seen, the whole of the running mechanism is set very low on a steel



JAMES & BROWNE GASOLINE BROUGHAM.

underframe; the engines are horizontal cylinder, breeches forward; the drive from engine shaft to primary gear shaft is by a Hans Renold silent chain and from the secondary gear shaft or counter shaft to the road wheels by heavy Brampton chains in the usual way. All shafts are parallel and as far as the countershaft in the same plane. No bevel gear is used and the driving force is nowhere turned round a corner. The footboard is on the underframe and the center of gravity obviously kept very low. Theoretically this car should be a speed demon.

Another photograph which will interest your readers shows the chassis of the 14 horse power Chenard-Walcker, a French machine which was much admired at the Crystal Palace show, representing a construction which has continually re-



JAMES & BROWNE CHASSIS FOR 10-H.P. GASOLINE BROUGHAM.

shown herewith is interesting as showing the bent of design in the cars which the Wolseley people contemplate entering in

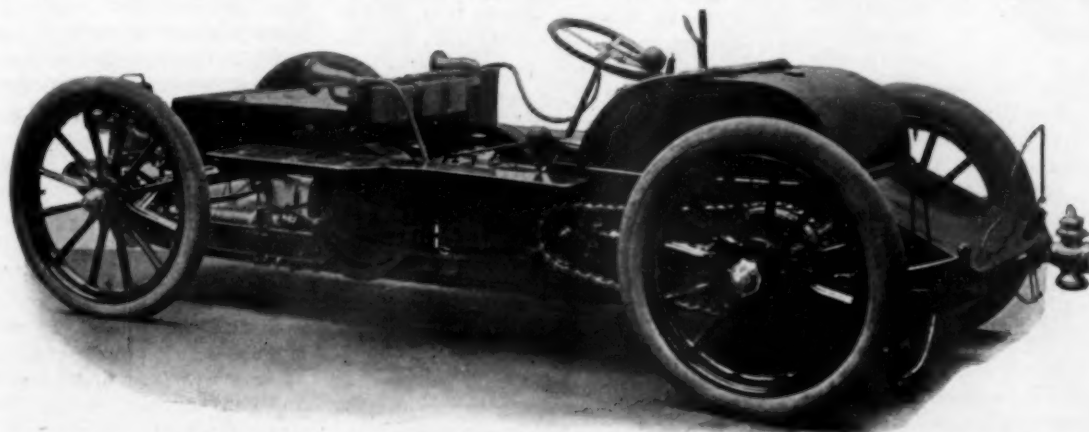
ceived the highest awards in French consumption and efficiency trials during 1902, as well as in the latest trials of this sort,

organized by *L'Auto*, the Parisian sporting daily. The illustration does not, of course, show the special induction valve sliding cam sleeve, but the method of car-

photograph of one of the cars just turned out by the last named firm. This vehicle is driven by a two cylinder horizontal engine, set below the driver's seat and car-

side or to the other, and in no case will superinduce sideslips on greasy roads.

The cylinders are cast all in one piece and the valves being opposite to each



NEW 40-H.P. WOLSELEY RACING CAR, WHICH WILL BE ENTERED IN FOREIGN EVENTS.

rying the differential shaft on bearing blocks above the fixed rear axle is plainly seen. The road wheels are rotated from this shaft by means of toothed pinions.

In a different class is the lately introduced 6 1-2 horse power De Dion, with its single cylinder engine set in front under the bonnet, and driving through an universally jointed propeller shaft to a two-speed expanding clutch gear box also enclosing the differential on the flexible driving axle. There is a great run on this car in London, and the importing agents are at their wits' ends to get deliveries.

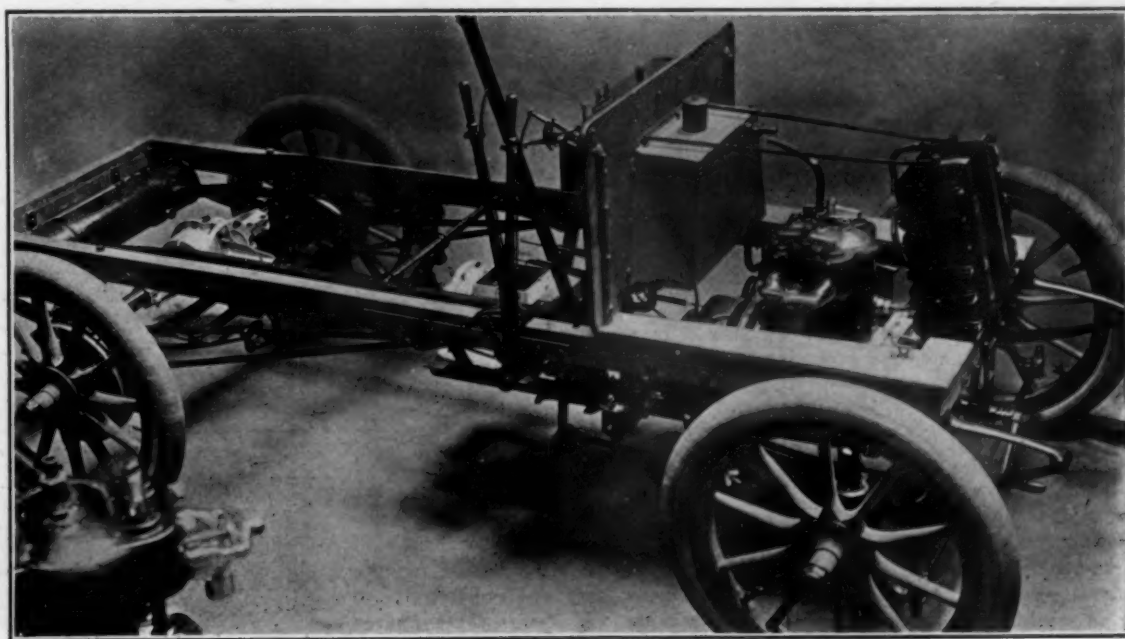
Both the Napier people and Messrs. Brown and James are building petrol broughams to compete with the horse-

ried directly on the main frame. Crank chamber and gear box are in one aluminium casting.

In the view given the aluminium guard plate which conceals the gear box from view has been removed in order to show the relative position of engine and gear box to the carriage. This chassis presents several interesting and ingenious points. A metal to metal clutch is used, the male member only requiring to be withdrawn two one-thousandths of an inch to free the gear from drive. The primary gear shaft is driven off the clutch shaft by a steel pinion meshing with a buf-foline toothed wheel. The engines are independent and the flywheel is set exactly

other and at right angles to the center line of cylinders it is clear that it is possible to have very simple cores, while the metal of the cylinder proper is left of the same thickness all around. It is connected with the other jacket only at valve ports, plug ports and holding down flange at opposite end. The possibility of cylinder warping is thereby avoided to the uttermost.

The clutch is independent of the engine shaft altogether, so that the latter is always free of any end thrust. With the clutch itself, which is self-contained and lubricated, there is absolutely no end thrust when driving and only very slight pressure when disengaged. The brake



CHASSIS OF CHENARD-WALCKER 14-H.P. CARS—CONSUMPTION TRIAL WINNERS.

less looking electric carriages which our upper classes have somewhat largely adopted for town work. I send you a

on the centre line of the car, so that its gyroscopic action at turns will be the same whether the vehicle turns to one

drum on the countershaft is mounted directly over the differential gear, so that there is no strain due to brake on hollow

sleeves of the countershaft. The two lower speed wheels being nearest to the differential gear the hollow shafts can be made small at their outer ends and gradually increasing in diameter as they approach the center. The countershaft brake is metal to metal, double acting, and will hold either way when oiled. The inlet valves are instantly accessible. The photo does not show the disposition of the exhaust springs, but by clever design these are kept entirely away from the heated parts, which, of course, preserves their temper. The springs are used in compression and not in tension, which greatly reduces the likelihood of breakage. The side brakes take the form of expanding shoes within the brake rings, the brake strain from these being delivered directly to the frame. The driving strain, too, from the countershaft is delivered directly to the frame by a triangular truss of tubes which are perceptible in the chassis picture.

The lubrication of the engine is performed by suction, the piston acting as a pump in each crank case. Any pair of gears in mesh are always close up to a bearing to prevent any possible whipping of shafts. The crank chambers and gear box are suspended from three pivotal points so that they are not affected in any way by frame torsion. All gear wheels being of ring form and bolted to armed bosses, are replaceable without interference with rest of gear.

It is generally admitted here that of all the automobiles built with horizontal motors on this side the James & Browne is by far the most advanced. The greatest thought and care has been given to its design alike for the obtainal of perfect and easy running of the car as for cheapness of manufacture.

Another Tire Invention.

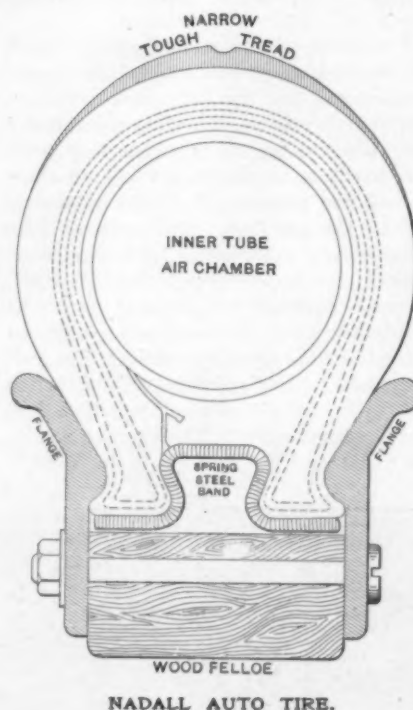
Staff Correspondence.

LONDON, March 4.—The termination of the tire monopoly in Great Britain is likely to result in a deluge of new devices in the Patent Office. One that seems to be possessed of considerable merit is the invention of Berne Nadall, an American now resident in London. This tire, as shown in the section, combines features of the Welch-Dunlop and the Goodyear in that the detachment and retention of the outer cover in position is obtained by means of the removable-lipped metal flange, and that detachment is not obtained by levering the beaded edge of the cover over the edge of the rim, always a brutal and unmechanical method. The spring steel band serves to keep the feet of the cover in position, to lift the air space in the tire above the rim edge, and in conjunction with the small flexible tongue to obviate the nipping of the inner tube. The dome shape of the vulcanized toughened tread is likely to prevent side slip.

ROLLS' FLYING KILOMETER AT WELBECK.

Staff Correspondence.

LONDON, March 2.—There is a considerable amount of rivalry between two or three crack drivers in this country, to wit: Chas. Jarrott S. F. Edge and the Hon. C. S. Rolls, son of Lord Llangattock, an extremely wealthy peer, anent the holding of the flying kilometer record as piled up over the course at Welbeck. It must be recognized that Welbeck figures can only be compared to Welbeck figures and may not be contrasted with similar performances over the official kilometer course at Dourdan in France. While the latter is perfectly flat and straight with lengthy take-offs and oceans of sea room at the finish, the Welbeck course has an insufficient take-off and even in that the would-



be record breaker has to pass through a gate after coming round a curve. But from start to finish the Welbeck course is on a falling grade, and as to the last 250 to 300 yards on a rapidly falling grade. The surface when dry is fast but lumpy, but when wet very holding and dangerous. The road is copped and hedged from start to finish, which is very nerve-trying when running at high speeds, as the driver feels gripped between the banks.

The figures standing to the credit of Chas. Jarrott were 28½ seconds for the flying kilometer, a speed equal to 78.56 miles per hour, and it was these figures that the Hon. C. L. Rolls set himself to cut last Thursday. Jarrott had driven a 70 horse power Panhard car over the course. Rolls made his essays upon an 80 horse power 4-cylinder Mors, with magneto ignition. While Jarrott's car

was fitted with an ordinary square-backed racing body with the usual motor bonnet dashboard, etc., all Mr. Rolls' vehicle had was what was exactly like an upturned boat in enamelled aluminum, cut-water stern-post and all, with a round hole cut amidships in her bottom for the automobile driver's body to come through.

Mr. Rolls made four attempts. He had hardly cleared the flying kilometer start on his first essay, when his ballast, which consisted of several half-hundred weights, shipped and breaking loose from their lashings, nearly stove in the car. He had to return slowly to Mansfield, some three miles away, to get a joiner to box them up inside the boat body, so that it was late in the afternoon before he made another start. The first complete run was only an exercise gallop, for the time totalled out at 32½ seconds, or only ½ seconds faster than the record put on by the old 50 horse power Napier on the Paris-Chartres Road just previous to the Paris-Berlin race of 1901. Having felt the course at speed he made another attempt, and going very much faster this time, covered the distance in 28¾ seconds, or at an average speed of 78.07 miles per hour. Returning to the finish and learning the time he declared that the record was easily within his grasp, as at the top of the final 300 yards of smart decline his petrol tap had shaken itself round and cut off the supply to the carbureter. Returning to the starting point, he tried again, and this time, but for his magnificent handling of the speed blast, would assuredly have come to grief. A few yards before he reached the first kilometer pole, when the machine was going nearly at her best, the near side driving tire burst with an appalling report, and the car swerved within an inch of the cop and hedge. The little knot of men round the time-keeper held their breath, for they fully expected to see the intrepid driver and his car take a flight into the next field, but, with consummate skill, Rolls righted her and got back onto the road. Some time was now occupied in detaching the burst and attaching a new cover, and then he went again. This time the attempt was splendidly successful, for when the time-keepers met and worked out the time it was found that Mr. Rolls had run the kilometer in no more than 27 seconds dead, a speed equal to 82.8 miles per hour. The waits had made largely for success, for throughout the afternoon the road had dried up, so that when the successful attempt was made the surface was as good as it could possibly be. Jarrott has already announced his intention of going for Rolls' time, so that we shall not lack excitement in this particular later on.

An Adjustable Relief Cock.

For greater convenience and certainty in starting gasoline motors, a French manufacturer has placed in the market

a compression relief plug, with which a slight turn of the finger piece limits the compression to two atmospheres, while further opening permits the introduction of gasoline. The idea is, of course, to prevent the total escape of the explosive charge and to permit the person who cranks the motor to relieve the compression in advance and close it without inconvenient haste. In machines in which no provision has been made for rendering backfiring impossible at the start, the use of this plug, set to regulate the compression to two atmospheres, will also make the backstroke harmless.

The device consists, it seems, of a needle or rod normally pressed to its seat by the end of the thumbscrew, but also actuated by a spring bearing against and fixed upon a flange on the latter, so that a half turn of the screw makes the rod operate as a safety valve set for two atmospheres—equal to the strength of the spring in this position—while two turns makes the springs operate in the other direction, lifting the rod, so that gasoline can be poured in if required for dissolving gummy deposits. The outlet for the compression is below the spring which is protected from the effects that an ignited mixture might have on its temper.

It would seem easy, however, to improve the described construction somewhat.

Unaccompanied Railway Baggage.

On French railways a tariff has been adopted for the transportation of unaccompanied baggage by fast passenger trains, largely for the accommodation of

were tried provisionally during 1901 and have now been definitely approved. The rates are by weight and distance, namely, 4 centimes per 10 kilograms carried 10 kilometers, so that, for example, 80 kilograms taken from Paris to Bordeaux (578 kilometers) will cost $20.04 \text{ francs} \times 8 \times 58 = \text{fr. } 18.56$. Hereto are added small amounts for handling and registration. With small weights the rate is 5 centimes instead of 4 centimes per unit. The unit is always 100 kilograms-kilometers. Certain minimum rates are charged independently of this tariff, when the total by computation would not exceed fr. 2.50.

The regulations provide that: "The present tariff can be applied only to articles forwarded by the travelers for personal use by themselves or their families, such as trunks, valises, baskets, packages and bags containing linen, clothing, shoes, toilet articles, weapons, books, photographic apparatus, hat boxes, blankets, canes and umbrellas, bicycles and perambulators, samples of commercial travelers.

"Excluded are all commercial articles not mentioned above, and also papers, values and articles subject to *ad valorem* rates."

Royal Title for Club.

Staff Correspondence.

LONDON, Feb. 28.—At the annual general meeting of the Automobile Club in Piccadilly last night the chairman, Roger Wallace, K.C., announced that His Majesty the King had graciously signified his willingness to become the patron of the club. This courtesy on behalf of our Sovereign is an indication of the keen

ity with such well known associations as the Royal Yacht Squadron, the Royal Thames Yacht Club and others attached to various sports which enjoy the King's patronage, and are thereby entitled to the prefix Royal. So should any of my readers have occasion to address a correspondent at the club house, the address will run as follows: Care of The Royal Automobile Club of Great Britain and Ireland.

Foreign Notes of Interest.

July 9 has been accepted by the A. C. de France for the Gordon-Bennett race, with the right reserved to advance it a few days if such is found desirable.

S. F. Edge, of the Napier Company, of England, though closely identified with automobiling in its most elaborate and costly form, has accepted the presidency of the British Motor Cycling Club.

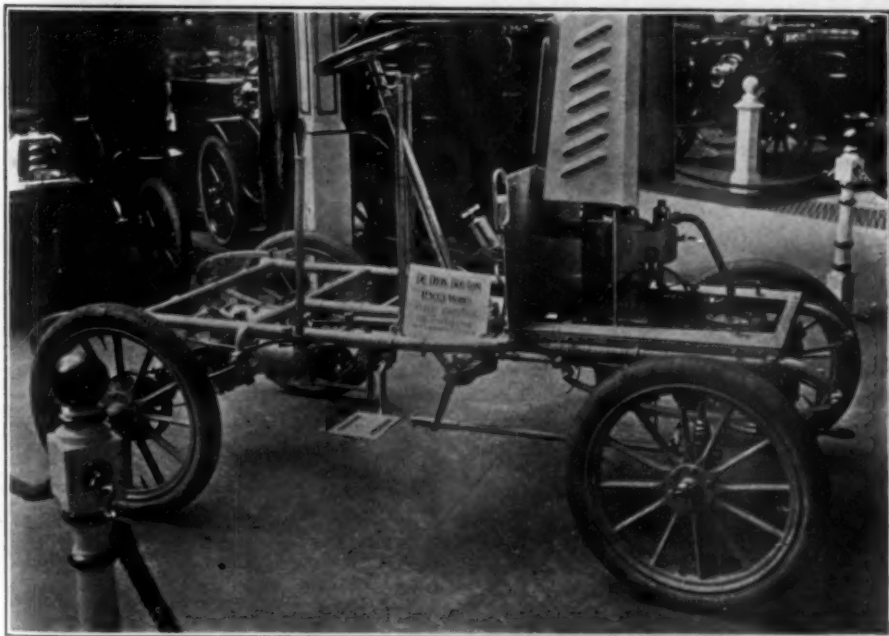
The English entries for the Paris-Madrid race so far comprise Messrs. H. R. Kirk, S. F. Edge, C. Jarrott, Mark Mayhew, J. A. Holder, J. E. Hutton, E. H. Arnott, and the Wolseley Company.

The German Marienfelde Automobile Company, whose cars were represented in New York last year, has joined forces with the Daimler Company, of Cannstatt, each company keeping its own directors.

It is stated in *The Car* that C. Jarrott will drive the De Dietrich car which drew first place for the start of the Paris-Madrid race, and that two other English motorists entered for the race will drive other De Dietrich cars. Others in turn will probably take the places vacated by the three British racing men.

The 8-cylinder C., G. & V. motor exhibited at the Paris show has now been tried and is reported to have proved itself so flexible and easily governed that it will be placed in a vehicle to be operated, as originally contemplated, driving the wheels without any intermediate gears. The report does not even mention a gear for starting the vehicle.

Eighty acres of land at Friedenau, a suburb of Berlin, have been secured by promoters in the German capital for the building of an autodrome, to include an automobile racing track, a cycle track, tennis courts, a football field, a basin for motor boat experiments and a hospital for first aid to the injured. It will be known as the Internationaler Sportpark Autodrom. The autodrome will be sole-shaped with two curves, north and south, and two bays opposite the long side. It will be macadamized with a length of 2,000 yards and a breadth of between 30 and 50 yards. In another part of the grounds will be a velodrome serving as an exhibition hall and in bad weather as a racing place. Another feature of the enterprise will be a school for automobile drivers.



CHASSIS FOR 1903 MODEL 6-H.P. DE DION-BOUTON—See page 324.

cyclists and automobilists who personally travel by means of their own conveyances and wish to send their baggage in advance to their destination. The arrangements

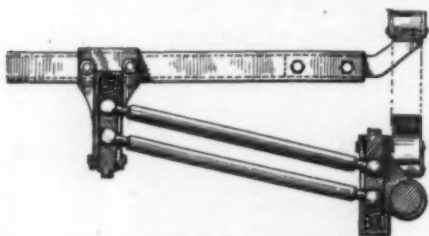
interest he takes in the progress of automobilism. Moreover, the royal leadership at once places the club, as the head of a great sport and pastime, on an equal

Patents

Running Gear.

No. 721,912.—J. W. Packard and W. A. Hatcher, War-en, Ohio.

This patent describes the running gear of the Packard model F machine, de-



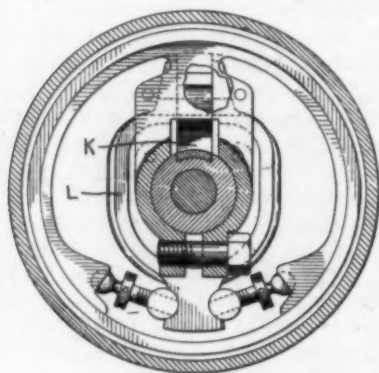
PACKARD RUNNING GEAR.

scribed in these pages January 17. The construction of the parallel distance rods used with the X-spring of the front axle is shown in the drawing.

Planetary Transmission Gear.

No. 721,807.—T. B. Jeffery and R. Symonds, Jr., of Kenosha, Wis.

In the drawing A is the differential gear on the axle or counter-shaft, and B is the gear to which the power is applied. B is attached rigidly to a pinion loose on the shaft C, and meshing with the similar gears D D, which are fast to pinions E on the other ends of shafts carried in the ring F, which is loose on shaft C. The pinions E mesh with a small gear attached to the hub of a clutch drum G, the clutch ring being loose on the shaft. They mesh also with an internal gear H, attached to a shell surrounding the clutch drum G, and made fast to a second clutch drum I, also turning freely on the shaft. Expanding clutch rings mounted on a sleeve J, attached to the differential drum, communicate the motion of one or the other clutch ring through the differential to the axle. When the brake band on ring F is



tightened, clutch G gives the slow motion forward, and clutch I gives the reverse. By locking both clutches and releasing the band on F, the whole mechanism revolves as a unit to give the high speed forward. The clutches are operated by connected

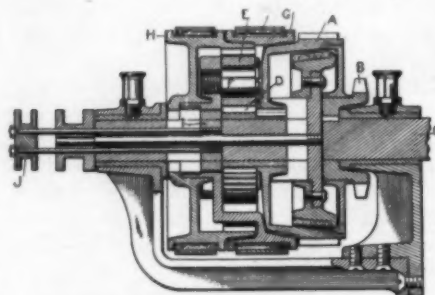
wedges which tighten one or the other or both as desired.

The character of the clutch is seen in Fig. 2, in which K indicates the wedge acting through yoke L and the toggles shown. The principal part of the weight of the yoke is put next to the toggles so that its centrifugal force tends to overcome the centrifugal force of the free ends of the expanding ring and thus prevent the clutch from locking itself at high speed.

Transmission Mechanism.

No. 721,736.—A. E. Osborn, of New York.

The power is applied at the gear teeth on the drum A, and is delivered by the



OSBORN TRANSMISSION MECHANISM.

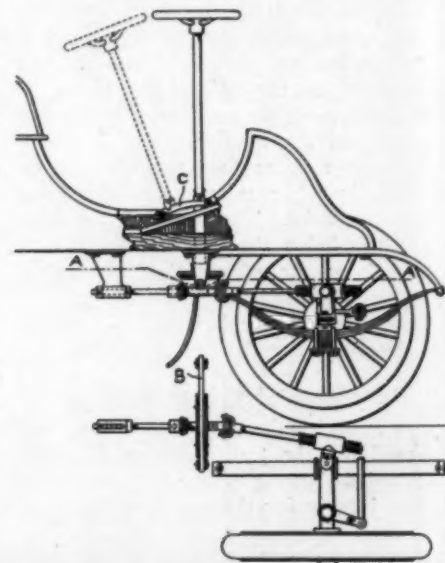
sprocket pinion B, keyed to the shaft C. The direct drive is obtained through the conical clutch contained in A, the male portion of which is carried on a bar working a slot through C. The hub A is keyed to a pinion D, loose on the shaft and meshing with three pinions E, carried on studs F. These studs are carried on a sort of spider, also loose on shaft C, and which is irregularly bent at its periphery to form the drum or ring G. Another ring H also turns loosely and carries an internal gear meshing with the pinions on stud F. A positive clutch I, operated independently on the conical clutch by the collar J, connects the hub of either ring G or ring H with the shaft. Outside brake

shows, or midway between the two hubs, allowing both to turn idly. For the slow speed, the conical clutch is released, clutch I engaged as in the drawing; and the band on H tightened. This compels the small pinions to roll inside the internal gear, carrying the shaft with them through clutch I. For the reverse, clutch I engages the hub of ring H, whose brake band is released, and the band on G is tightened.

Wheel Steering Device.

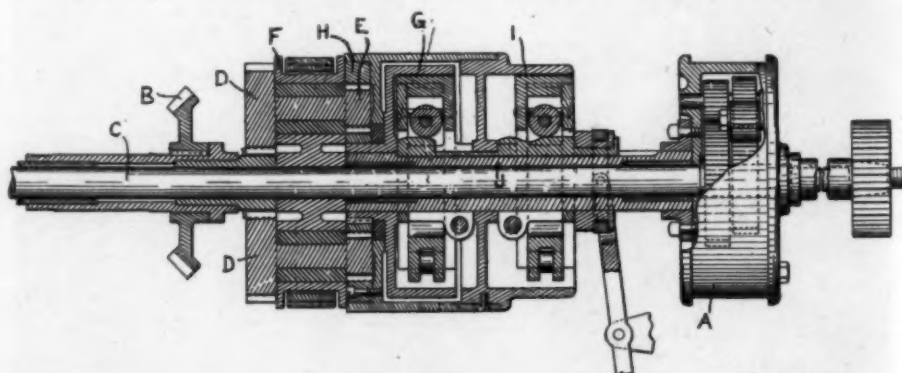
No. 721,859.—H. H. Buffum, of Abington, Mass.

This device comprises a bevel gear at the base of the steering column meshing with a bevel pinion on a jointed shaft with a screw at its forward end. A nut



BUFFUM STEERING DEVICE.

on this screw is pivotally connected to an arm from the steering knuckle as shown in the plan section taken along the dotted line A A. The column is pivoted on a rocking shaft, B, at its base, and may be tilted back for operation as shown in the



JEFFERY & SYMONDS PLANETARY TRANSMISSION GEAR.

bands hold either of these rings fixed at will.

When the direct drive is in action, the brake bands on rings G and H are both free, and the clutch I is either in engagement with the hub of G, as the drawing

dotted lines, where it is latched by a pin and spring pedal C. When raised vertically the bevel gear and pinion are out of mesh. There is nothing to restrict the act of disengaging to any particular position of the steering knuckles.

VEEDER TACHOMETER.

This is a new device for giving at all times an indication of the speed of a revolving shaft, and as such is applicable to automobiles, for which service in fact the instrument illustrated was designed. It depends for its action on the static pressure set up by a centrifugal pump, the pressure itself being the medium employed, and not any actual flow of liquid.

The device is shown externally in Fig. 1, and Fig. 2 shows the gauge portion of it in section. It will be seen that it comprises substantially a reservoir *A* of fair size, and a glass tube *B*, the reservoir and tube being normally separated from each other and connected to pipes *C* and *D* respectively. The pump is shown in Fig. 3.



FIG. 1 - EXTERIOR VIEW.

Its shaft has a bearing on each side of the paddle wheel *E*, and a stuffing box where the shaft projects. The reservoir is connected by piping to the center of the pump, and the tube to the water space

outside the paddle wheel. When the paddles revolve, the water in the tube rises till the difference in level in the tube and the reservoir balances the pressure due to the pump. As this pressure is substantially proportional to the square of the speed, the graduations of the scale are much more open at the top than at the bottom, from which it follows that the

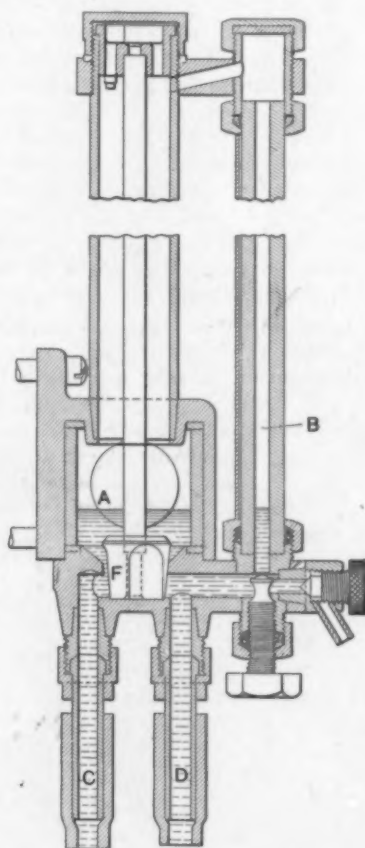


FIG. 2 - GAUGE IN SECTION.

instrument registers much more accurately at high than at low speeds. To correct the instrument, it is only necessary to bring the liquid in the tube to the zero point by adding to it or drawing it off when the vehicle is standing still. For this purpose, and also for testing the instrument and causing liquid to circulate from pipe *D* to the reservoir and back through pipe *C*, the valve *F*, rotated by the long stem rising from it, is formed with recesses by which communication may be established between the tube and the reservoir.

For automobiles, the instrument is made with the gauge either 6 inches or 12 inches long, according to the speed of the machine, and scales are provided for maximum speeds of 20, 30, 40, 50 and 60 miles an hour. The pump is driven by gearing or sprocket chain either direct from the vehicle wheels or from some shaft positively geared to the wheels; the form and ratio of gearing depending on the particular machine. This instrument is made by the Veeder Mfg. Co. of Hartford.

FLUID INDICATOR.

A simple device indicating the rapidity of flow of water in a pipe is shown in the accompanying drawing. It is intended primarily for use on gasoline machines

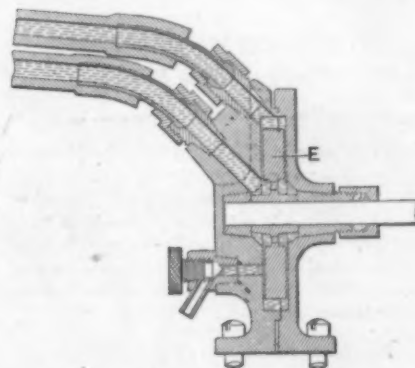
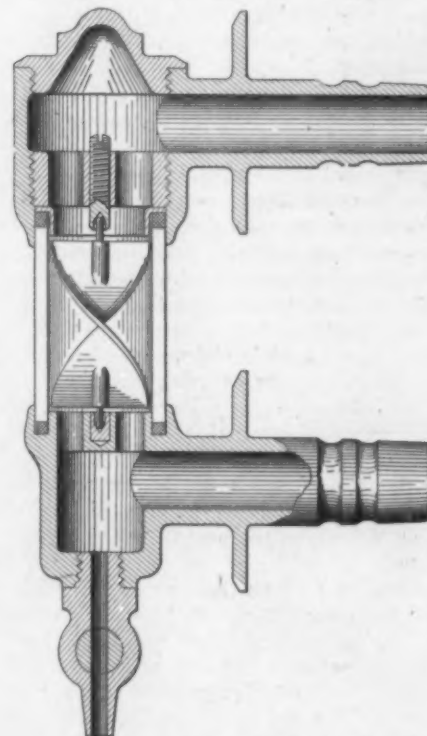


FIG. 3 - PUMP IN SECTION.

with forced circulation, as a safeguard against damage resulting from a failure of the pump. It consists essentially of a light vane, formed somewhat on the principle of the screw propeller, which is mounted on bearings in a short glass tube, through which the water is made to pass. Any motion of the water causes the vane to revolve, the rapidity of its motion corresponding to that of the water.

As constructed for the market, the device is fitted with screw connections for



KING FLUID MOTION INDICATOR.

3-4 inch pipe, and means are provided for taking up the wear of the pintles in the bearings. A pocket is provided at the bottom of the device, in which solid mat-

(Continued on page 332.)

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SATURDAY, MARCH 21, 1903.

CLUB RULE.

Quietly conducted as was, and is, the little controversy between the Automobile Club of America, that wants to hold a contest for "commercial automobiles," and the National Association of Automobile Manufacturers, that does not want this contest to be held this year, it has probably raised a question with several members of the manufacturers' guild as to what should constitute the purpose and work of automobile clubs. Whether they are friendly to the industry with the kind of friendship which the industry wants, or with a sort of paternal feeling which does not exclude mild forms of discipline and castigation, if needs be, is the question arising immediately when the possibility of a clash, such as the present one, is manifested.

Looking on from the outside the public and the press are also inclined to ask the leading question: What are clubs for? They have seen contests organized and carried out under rules well adapted to veil the true nature of the performances through unlimited license for repair work *en route*, and apparently intended to gloss over the difference in merit between cars which had much need of repair and those which went through without being touched, between those capable of withstanding the shocks of much higher speeds than were allowed and those barely able

to hang together at a lower speed than the average automobile owner demands of his conveyance. They have seen the clubs stealthily lobbying for pet measures in legislatures rather than attempting openly to lead public opinion. And it must have been difficult for both the public and the press to conceive of the mission of clubs otherwise than as subordinate to the financial interest of manufacturers in temporary opposition to those of the public.

One may turn to the constitution and by-laws of clubs to find their professed objects, but the generalities of "fostering the automobile movement" and "developing the automobile sport" give but little information, when manufacturers prefer to "foster" in their own way and the public will have none of the "sport." To ascertain what the generalities mean we must turn to the work really done by the clubs.

We find then that they have assumed the position of moderating bodies, mediators between an industry that might languish and die in its infancy without artificial aid, and a public whose initial prejudices against automobiles should be tempered by the wisdom of the more generous and far-seeing, and who, on the other hand, once won over, should be protected against their own enthusiasm and credulity.

To maintain the claim of fitness for this senatorial position as arbiters between opposing interests, the clubs have been composed of men who volunteered their time, their purses and their corporeal safety as pioneer purchasers and operators of automobiles and who placed their fund of experience, so gathered, at disposal, not broadly or frankly, perhaps, but discreetly, in homeopathic doses measured out according to a sapient judgment as to what would be good for the two patients under their care—the industry, a lusty nursling, inclined to overeat, but with a weak stomach, and the public, a simple-minded adult, heir to a fortune, but not to be trusted out alone after dark.

From the fact that nearly all clubs in all countries have taken this attitude to begin with, it may be inferred that it must have been reasonable and legitimate at one stage of affairs, namely, when the industry did not pretend to give value for the money it asked and when the public had not received proof of the permanency and eventual importance of the whole movement. Those who in those days more or less deliberately sacrificed money values to further the cause of progress—whatever their motive—were entitled to rank high in the councils for ways and means. They had bought the right to a voice. But it was unavoidable that the industry would grow beyond their charge, if it was in hands competent to gain insight by experience and recognize its own interests. It was even unavoidable that it should be split into factions with clashing interests and that the clubs would not be able to

take care of them all impartially. And it was also unavoidable that the public should refuse to receive tips blindly from the clubs as soon as it had gathered some material wherewith to make its own deductions and should insist on getting from the clubs simple reports of facts or else reserving its rights to ignore club advice.

The industry, grown independent, would not be browbeaten, and the public, having learned a thing or two, would not be bamboozled, and those clubs which thought they had acquired a right in perpetuity as mediators and instructors, were continually doing either one or the other, for the simple reason that neither the seller or the buyer of an article is willing to compromise his interests, once he has perceived them. Other clubs which have retained some degree of real influence under the gradual change of conditions have recognized that they cannot be in opposition and cannot dictate in any of the two fields where either the industry or the public claims exclusive rights, but only in such matters as the rules of sport and in their provisions for benefiting their own members.

The Automobile Club de France made a capital stroke in the interest of all when it reduced the weight limit for racing cars. Its position as arbiter of racing permitted it to do so, and both the industry and the public were gainers. But it has long ago abandoned all idea of "fostering the industry" by giving the public an exaggerated idea of what "automobiles in general" will do. The rules of the Paris-Madrid race, as indeed the rules of all races since the Paris-Berlin, rigorously exclude any feature which might make a car appear better than it is. They were given in extract last week, page 296. Only two minutes per day are allowed for care-taking of the machines from start to finish. All other time spent in repairs—and this only on the road and without aid from outsiders—is counted in the time, and shows in the result.

In the contest for commercial vehicles projected by the Automobile Club of America, on the other hand, it has been declared the intention to try out only certain qualities of the competing vehicles, leaving the great essentials relating to durability and economy out of consideration, it being admitted that these essentials could not be demonstrated one way or the other, in any contest that the club could organize at present. The result would be to show the vehicles more fit than those who use them know that they are. Or the result would be to show one vehicle fit for its work which might be particularly lacking in the essentials, and another one less fit, though it might excel in the untried qualities.

Against this proposition the National Association of Automobile Manufacturers has set its veto. But the club so far insists on carrying the plan out, claiming it is

for the benefit of the industry, on the principle that an emasculated contest is better than none at all.

It must appear peculiar to those who have been asked to enter their vehicles, that a leading club should want them to lend their aid to the making of an avowedly incomplete and misleading demonstration. For the industry to be helped against its will and judgment and for the public to be asked to contribute to its own delusion are odd fruits of club activities and seem to indicate that there is an anomaly somewhere, whether it lies in a disproportion between abilities and intentions or in a desire for holding on to the reins of paternal government after the children have gone into business for themselves.

More than fifteen feet wheelbase, it is announced from Cannstatt, will be the special feature of the nine Mercedes racing machines entered for the Paris-Madrid race, and the makers themselves say that the vehicles look "absurd." The statement is vouched for as correct and is carrying astonishment and consternation into the ranks of racing men and racing-machine makers, and this, perhaps, is the object of the announcement, unless it be to show that speed vehicles must be radically different from those intended for ordinary use. As it has been previously stated that the engines in these machines will be "amidships," the reader is by these gradual disclosures tempted to expect something like a huge buckboard vehicle without springs and possibly—who shall say—with all four wheels driven and steered.

An appropriation having been made by the Government of France to insure a large exhibit of French automobiles at the St. Louis World's Fair in 1904, the National Association of Automobile Manufacturers is now making efforts to get a good representation of American manufacturers, also, and to this end invites its members to make their exhibits in a body under the auspices of the association, "for patriotic if for no other reasons." There will be no charge for space at St. Louis, but applications must be made early if a good display shall be secured, and the association states that the last opportunity for reserved space practically expires this month.

An appreciable diminution in the number of horses in Paris has been caused by the increase in the automobile industry, according to *Petit Bleu*. Its statistics show that in 1901 there were 96,868 horses in the city, in 1902, 91,976, and this year the number is believed to have fallen below 90,000.

Paris statistics show that in three months horse-drawn vehicles caused 597 accidents and 23 deaths, while automobiles caused but 92 accidents and only one death in the same period.

Foreign Forecast of American Engine.

At the moment of going to press THE AUTOMOBILE received from London a copy of an interesting paper read before the Royal Automobile Club of Great Britain and Ireland by A. R. Sennett, A. M. I. C. E., and which contains a passage indicating a remarkable coincidence in the trend of scientific thought on both sides of the Atlantic, when compared with the salient features of the two-cycle fuel oil engine described on p. 316 of this issue. What the English engineer points to as the construction for which we should logically strive seems almost identical with that embodied in Ostergren's experimental engine and in the drawings here reproduced.

The passage referred to is the following:

"To conclude, I will just say one word concerning the future of the motor. The thing to consider is what is it we ought really to strive for? I think, if you will reflect, you will agree with me it is to produce an internal combustion motor giving off its power by means of impulses analogous to those of the steam engine. In other words, an internal combustion engine *per se* as opposed to an explosion engine. That is the first thing. Then the second thing is so to bring this internal combustion under control that we may increase or diminish the length of time during which it shall act for each stroke—in other words, to control the power of our motor by the length of combustion and subsequent expansion of the gases within the cylinder in a manner very analogous to the automatic varying cut-off of a good steam engine.

"Nothing can be more unscientific than the present system of mixing the fuel with its oxygen before ad-

mission to the motor, nor the derivation of its power by means of combustion so rapid that it may well be termed an explosion. What is wanted in place of it is a means of sustaining that combustion and of passing fuel into the cylinders in exact accordance with the power required *pro tempore*. By this means we should obtain a motor embodying that valuable attribute of the steam engine often spoken of as the 'great elasticity' of its power. A motor, moreover, of far greater efficiency, both theoretical and practical, and of extraordinary simplicity, even when compared with our old and trusted servant the steam engine, if we take, as we must take, the engine and boiler together. Such a motor would at the same time solve the change-speed problem, its range of power would quite equal the steam engine, for from the same motor we should have moderate power with very great efficiency, and great power—when required—with moderate efficiency.

"With regard to the immediate future, one would expect to see improvements in the direction of running motors with hotter cylinders—which the introduction of thin steel cylinders will enable to be done—a greater degree of expansion, enabling silencing to be more effectively dealt with; the use of higher initial compression enabling automatic ignition to be made use of, and with it a great advance in simplicity."

Perhaps it should be stated that the Ostergren engine is financed mainly by English capital, and that the possibility is therefore not quite excluded that the peculiar coincidence may, after all, be less a coincidence of thought than of events and purpose. *Honi soit qui mal y pense.*

DRAWING FOR START IN PARIS-MADRID RACE IN MAY.

On February 15 the number of entries for the Paris-Madrid race had reached a total of 232, listed from 1 to 235 (three of the entries having been annulled to rectify an error), and \$70,000 francs had been paid into the coffers of the Automobile Club de France in entry fees, more than three months in advance of the event. The lists of entry remain open until April 15 at the normal fees, and thereafter until May 15 at double fees, but only those entered before February 15 were entitled to draw lots for place at the start, while all later comers must depart in the order of entry. Hence the fees came thick and fast, by mail and telegram, until that date. The latest to arrive came from the Matheson Company, of Grand Rapids,

Mich., who entered three cars, being the only American manufacturers represented, and in order to admit them the drawing was stopped after No. 1 had been drawn, as not till then the fees for their entry were received by the secretary of the technical committee, although announcement of their participation had been made previously by cable.

A De Dietrich car (Turcat-Méry transmission gear) received No. 1, a Panhard No. 2, a Renault No. 3, a Decauville No. 4, a De Dietrich No. 5, a Haustgen motor bicycle No. 6, a Mars No. 7, a Georges Richard No. 8, H. S. Harkness, with his new American-built special car, No. 9. The first Mercedes to start will be No. 14, the first Darracq, No. 47, the first C., G. & V., No. 53, the first Gardner-Serpollet, No. 90. The Matheson cars got Nos. 95, 100 and 101. Foxhall Keene got No. 114.

Gray Dinsmore, 123, the American painter, Dannat, No. 149. Henry Fournier drew No. 83.

Of the best-known manufacturers the following numbers of cars were entered by the makers: 12 Panhards, 9 Mors, 6 Gardner-Serpollets, 10 Renaults, 10 De Diétrich (of which two from the German branch), 4 Decauvilles, 4 C., G. & V. cars, 2 Benz (German), 8 Georges Richard cars, 7 Darracqs, 12 Cléments (of which 4 motor bicycles).

Thirty-eight was the total of motor bicycles, 35 of voiturettes (250 to 400 kilograms), 57 *voitures légères* (light cars, 400 to 650 kilograms), 102 of *grandes voitures* (heavy cars, 650 to 1,000 kilograms).

It is expected that the total of participating vehicles will be increased to 275 before the entry lists are closed and this great number of contestants in the racing section of the event has caused a modification in the rules for starting. It was first contemplated to start the vehicles two minutes apart, beginning at three o'clock in the morning as usual, but as this arrangement would put over nine hours between the first and the last car to leave and would hold traffic from the highways for the same length of time, it is now the plan to start the vehicles one and one-half minutes apart and possibly two at a time.

Fluid Indicator.

(Continued from page 320)

ter may collect and be washed out by opening the pet cock below. If it is necessary to remove the vane, this may be done by unscrewing the cap at the top and the perforated piece which carries the screw forming the bearing for the upper pintle. The device is of course intended to be located on the dash board in plain sight, and the water may pass through it in either direction. This indicator is manufactured by A. W. King, Maywood, N. J.

Striker's Chauffeur Struck Too.

Special Correspondence.

NEW HAVEN, Conn., March 16.—An amusing incident in the automobile line is narrated in connection with the Waterbury trolley strike. The strikers purchased an automobile to run there in connection with their work of boycotting the trolley company. After the driver of the machine had been at work on the new job for a week, and after his long hours had nearly exhausted him, he went on strike himself. It appears that the man was expected to put in about 15 hours a day, but he refused, saying that he was a member of a union himself, and could not work over 10 hours. The strikers recognized his union, granted his demand, and thus put an end to the one man strike.

The Roe Automobile Co., of Buffalo, N. Y., has filed articles of incorporation with a capital of \$10,000.

Fisher's New Racing Machine.

Special Correspondence.

INDIANAPOLIS, March 14.—Carl Fisher, of this city, announces that he will be entered in the big race at Louisville, Ky., July 4. The first heat will be a distance of one mile, the second three miles, and the third five miles if a third is necessary.

Mr. Fisher is having a machine built especially for this race. It will have an engine of 1,000 horse power, with four double cylinder engines. Gasoline will be used, and in racing shape the car will weigh about 2,600 pounds.

Carl Fisher has just returned from Cleveland where he went to see the big machine which is being built by Winton. Concerning the machine, he said to your correspondent:

"The machine that Winton has been using is of 80 horse power, and judging from the size of the two I would say that the new monster will be at least 140 horse power. It is the biggest thing of the kind I ever saw, and many new wrinkles are being worked out in its construction. My idea is that it will either be a world beater or a complete failure."

Local automobilists are still hoping that Henry Fournier, the world's champion auto driver, may be seen here in August. His appearance here depends upon the formation of a circuit of a half dozen cities. If this circuit is formed, it is understood that Indianapolis will be included.

Owners Seek Protection from Drivers.

The Automobile Club of America considers it a serious matter the way certain professional chauffeurs levy tribute from garage keepers, on one side, and from their own employers, on the other, and manage to get contributions from the general public also by renting their masters' vehicles to strangers for nightly pleasure excursions and pocketing the proceeds. With from \$25 to \$40 weekly wages, a commission on stable patronage from the garage owner, on the repairs from the repairman, on replacements from parts manufacturers, an occasional bill for fictitious extras and a little private night owl livery service, it is believed that the chauffeur is making considerable hay while the moon shines, and the club's board of governors is casting about for means to curb his financial ambitions.

The system used in China with physicians has been proposed, but not yet generally adopted. There the wary mandarin pays his doctor only for the days when he and his family are in perfect health and deducts for all sick spells at a heavy rate. A few persons in France have found this system adaptable to the chauffeur. They pay him a fixed sum per month, he to defray all repairs and to stand a progressive fine for every hour the automobiles in his charge are out of condition. Unfortunately this arrangement proves imprac-

ticable so long as the demand for chauffeurs exceeds the supply. They simply will not submit to it, and what shall the poor rich automobile owner do?

Also the National Association of Automobile Manufacturers is trying to solve this problem. It has a committee consisting of Messrs. Kittredge, Gash and Adams to consider it.

Between the Club and the Association it is believed that a system will be developed for keeping tab on the automobile operator by rendering it impossible for him to get employment unless he can show a clean slate from previous employers.

The Fatal Accident at Buffalo.

Special Correspondence.

BUFFALO, March 12.—Arthur R. Pennell was instantly killed, his body being frightfully crushed and mangled, and his wife who accompanied him so seriously injured that she died twenty-four hours later, by the automobile in which they were riding leaving the roadway and plunging down into a stone quarry on Kensington Avenue, near Fillmore Avenue, in the south-eastern part of the city, about 6 o'clock last Tuesday night.

The only eye witnesses to the disaster were two youths, George Dunbar and William Lennan, employees of John R. Keim, the bicycle parts maker, who were within a few rods of the point where the vehicle left the road. These boys say that wind blew Mr. Pennell's hat off and that he made an attempt to catch it, whereupon he bent forward as if working at something in the bottom of the machine. Instantly the machine shot toward the curb and as instantly disappeared in the deep rock-ribbed pit below. The hole is some twenty odd feet deep and is strewn with boulders. Those who reached the unfortunate couple after their awful plunge found Pennell pinned beneath the vehicle, which was bottom side up, with his head crushed so as to be almost unrecognizable, while Mrs. Pennell was found lying several feet away shockingly bruised and with her skull fractured. She died without recovering consciousness.

Between the curb of the street and the quarry proper is a stretch of earth about 80 feet wide which separates the street from the hole and which is without the slightest protection at the point where the machine went over the brink. The turf at this point was soft, as the result of the rain of the day, and showed the wheel track of the vehicle, being apparently ploughed up by these on the right side of the vehicle while those on the other side left a smooth track as if they had slid over the earth. This fact is considered by many as indicating that the brake was set when the machine left the roadway and it is generally believed that Pennell applied the brake suddenly, and that this action with the high rate of speed at

which he is said to have been running caused the machine to swerve on the slippery asphalt pavement. When the machine was examined it is said that the brakes were found set and the power shut off.

The vehicle was a Buffalo electric stanhope of last year's pattern and had just come from the factory where it had received a thorough overhauling.

Pennell was given to rapid driving and it is recalled by those who saw the vehicle just previous to its fatal plunge that it was running at an extremely high rate of speed. It was raining and the asphalt pavement was slippery and it is believed that Pennell either lost control of the machine when he reached for his hat or that he applied the brake so suddenly that the vehicle veered around on the wheels upon

BOSTON, March 14.—A clever lawyer representing the Massachusetts Automobile Club drew some interesting pro-automobile statements from a doctor who appeared against the automobile at a hearing on the restrictive bills before the Legislature's committee in this State the other day. The doctor was F. S. Billings, of Sharon, and after he had urged licenses for automobile operators and absolute prohibition of big touring cars on country roads, he told the committee in a burst of confidence that he was a horseman, himself, and that he drove fast horses; had run over a child before now because he couldn't tell that the child was about to

miles an hour and I don't care for it, I can hold the horse all right!"

A few moments later, in discussing the speed possible on the road with a horse, the doctor declared in a burst of pride:

"The horse that can trot fifteen miles an hour is rare. I've got a horse that can trot in 2:05."

Mr. Matthews scored again. "Of course you don't mean to say that you trot him on the roads at that speed, do you?" he asked.

"Why yes, I do," replied the doctor, taken off his guard by the lawyer's quiet manner, "on outlying roads where there isn't much travel. I'll admit that."

And Mr. Matthews merely smiled.

HEARING NOT CONCLUDED.

They did not carry the hearing on these bills to a conclusion; in fact they merely opened it. But they called up all seven bills before the committee, including the one proscribing all autos capable of making twenty miles per hour, and postponed the whole matter until March 16. One of the lawyers for the anti-automobile interests—and there was an array of eminent counsel for both sides present in the room—announced that if the matter was continued he thought the opposing interests could get together and agree on a single bill making a compromise as to what actual legislation is at present desirable. It is understood that the automobilists seek first and foremost a raising of the speed limit to twenty miles in the country and twelve miles in cities, and that for this they are willing to concede proper markings, lights and alarm devices, and also State registration. Some of the antis want licenses, but the automobilists will resist this strongly. The twenty-mile capability section will probably be dropped.

Chicago Club Program.

Special Correspondence.

CHICAGO, Ill., March 16.—Fourteen events are included in the list of runs and tours arranged for the coming season for the members of the Chicago Automobile Club, according to the announcement of Dr. Charles H. Davis, chairman of the runs and tours committee. Chief among these is a run to Mammoth Cave, Ky., starting June 25 and returning July 7. The run will be about 1,500 miles long and on the way the club members participating, who will number forty at least, will be entertained by the automobile clubs of South Bend, Indianapolis and Louisville. The complete schedule follows:

May 23, Saturday, 5 P. M.—Run over the boulevard system of Chicago. Dinner at the Chicago Beach Hotel.

June 6, Saturday, 4 P. M.—Run to the La Grange Golf Club. Dinner after dinner



PENNELL'S AUTOMOBILE RIGHTED AFTER THE BUFFALO ACCIDENT.

which the brake was applied, sending it over the brink of the quarry.

Pennell figured prominently in the recent Burdick murder mystery, which has attracted national interest, he being named as co-respondent in the divorce proceedings which Burdick had instituted against his wife and which it is believed was the direct cause of the murder of Burdick. It is believed, locally, by some persons that Pennell might have become deranged while running the vehicle and turned it into the quarry, but this assumption is not borne out by the facts as here narrated.

The Davis Motor Works, of Waterloo, N. Y., will soon be moved to Geneva on a site recently purchased there.

run directly under his horse's hoofs, and he felt that his accident was an argument against the touring cars. Touring cars, too, were run fast, and would frighten horses. Then came the first question from the club attorney, Hon. Nathan Matthews, Jr.

"Do you think," asked Mr. Matthews quietly, "that if a horse is going to be frightened anyway, the question of speed comes into the matter very much?"

"Oh, it's the size of the thing that scares the horse," rejoined the doctor, offhand. Then, in the face of his previous argument for a maximum speed of only fifteen miles per hour, he added: "Take a moderate sized auto; what I call a gentleman's rig, and my horse doesn't mind it. Let a machine like that come along at sixty

June 14, Sunday, 10 A. M.—Tour to Fort Sheridan. Return same day.

June 25, Thursday, 10 A. M.—Start on tour to the Mammoth Cave of Kentucky. Return July 7.

July 19, Sunday, 10 A. M.—Basket picnic at Hubbard's woods.

Aug. 1, Saturday, 3 P. M.—Run to Hinsdale and return.

Aug. 8, Saturday, 3 P. M.—Run to Glen View Golf Club at Evanston. Return by moonlight.

Aug. 14 to 17—Run to Pistakee Bay, Lake Geneva, Oconomowoc and Wisconsin lakes.

Aug. 29, Saturday—Run to the Auburn Park Golf Club.

Sept. 5, Saturday—Tour through LaPort, Hammond, South Bend and Indiana towns. Return from South Bend Sunday.

Sept. 13, Sunday—Run to Elgin, Ill.

Sept. 18, Friday—Automobiles shipped by boat to Grand Rapids, Mich. Club the guests of the Grand Rapids Automobile Club. Return Sunday.

Oct. 3 and 10—Runs and dinners in some Chicago suburbs not announced as yet.

CLUB ASSOCIATION TO ADMIT INDIVIDUAL MEMBERS.

With its new president, Dr. J. A. Chase, of the Rhode Island Automobile Club, in the chair, the American Automobile Association convened at a directors' meeting last week at the rooms of the Automobile Club of America to deliberate on a new set of racing rules and to consider the advisability of admitting individual, unattached motorists to membership.

No action was taken on the racing rules, owing mainly to the absence of A. R. Pardington, of the Long Island Club, and the unfinished condition of a set of rules for special contests under preparation by a scientific student of the situation who has undertaken to formulate some new ideas on the subject.

Secretary Butler reported on the proposition to admit individual members, and it appeared from his report that there is a demand for the contemplated change, especially from southern States where clubs have not been formed. On the other hand it was pointed out that the constitution and by-laws of the Association would have to be amended before the ranks could be opened as proposed.

Those present were, besides the chairman, W. E. Scarritt, of the A. C. A.; Dr. W. C. Millbank, of the Albany Club; F. C. Lewin, of the Philadelphia Club, and W. J. Stewart, of the New Jersey Club. After discussing Secretary Butler's report they decided in favor of admitting individual members, and appointed Messrs. Scarritt, Stewart and Butler a committee to draft the required changes in the constitution and by-laws, these to

be submitted to the vote of the Association as a whole. The secretary was also instructed to confer with the officials of the American Motor League for the purpose of ascertaining whether it might be the consensus of opinion that the two national bodies of motorists had better be merged, now that the question of individual membership was to be disposed of in favor of the League's view on this mooted point.

Applications for sanctions of race meets were laid before the meeting from the Syracuse Automobile Club for a meet in September in connection with the State fair, and from the Massachusetts Automobile Club for an event on the Readville, Mass., track in May.

Chicago A. C. and Legislation.

An active part has been taken by the Chicago Automobile Club in local legislation, the club having appointed a committee to confer with the City Council when the question of a license law was agitated. Conferences have also been held with the South Park Board before its rules governing the use of automobiles in those portions of the city under its jurisdiction were adopted.

The city license ordinance established a board of examiners, consisting of the city electrician, Commissioner of Health and the city engineer, who shall examine each applicant to determine his or her fitness to operate an automobile; provides for a license fee of \$3 for the first year and \$1 for each year thereafter, without further examination; limits the speed in all public thoroughfares to eight miles an hour; requires drivers to observe the rules of the road; requires an alarm bell or gong not less than four inches in diameter to be sounded at street crossings and wherever else it is deemed advisable by the operator; requires a brake or set of brakes of sufficient power to bring a vehicle going eight miles an hour to a stop in ten feet; requires a lighted lamp or lamps after dark, and provides a fine of \$5 to \$25 for each violation of the foregoing provisions.

The South Park regulations, which apply to all South Side park drives and boulevards, prohibit the driver of a car from allowing the vehicle to stand with the machinery running; forbids the use of a machine that emits smoke or vapor or offensive odors; prohibits the sounding of bell, gong or whistle; limits speed to eight miles; prohibits driving more than two abreast; requires drivers to keep to the right, and provides a fine not exceeding \$100 for each offense.

Club Consents to Tax on Cars.

Special Correspondence.

CINCINNATI, March 13.—W. W. Granger has introduced an ordinance before the Board of Aldermen in Cincinnati to regulate the speed of automobiles and plac-

ing an annual license fee of \$3 upon all owners of such vehicles. In addition a tag bearing the number of the license in characters four inches high must be secured and fifty cents per letter is to be charged for that. The speed in the business district, bounded by Water and Court streets, and John street and Broadway, is limited to seven miles per hour. Drivers must be more than 16 years old.

Colonel Max C. Fleischmann, formerly vice-president of the Cincinnati Automobile Club and owner of several machines, framed the proposed ordinance, and he deems it fair to all. He says owners will be willing to comply with all the terms of the ordinance and that the members of the club will be perfectly willing to aid in enforcing them. He thinks the city should reap some benefit from the automobiles used in the city, as well as from the other vehicles, which are taxed a fixed amount.

Club Meeting in Syracuse.

Special Correspondence.

SYRACUSE, N. Y., March 14.—At its last meeting the Syracuse Automobile Club appointed the following committees: F. H. Elliott, H. M. Keese and Edward Zahm, on membership; C. A. Benjamin, H. W. Smith and W. D. Brown, on runs and tours; Henry W. Walters, G. R. Betts and A. T. Brown, on laws and ordinances; G. S. Larrabee, L. C. Smith and H. H. Franklin, on roads. New members elected were C. A. Lee, of Oneida; John Maxwell, of Oneida; M. C. Blackman, of Syracuse; S. C. Tallman, of Auburn, and O. N. Hine, of Jamesville.

Union of Empire State Clubs.

The matter broached last fall of forming a New York State Association of automobile clubs has been brought to the front again by the officers of the Syracuse Club, who have appointed a committee consisting of Hurlburt W. Smith, chairman, Willet L. Brown and Frederick H. Elliott to take charge of the project and call a meeting for perfecting the organization. Mr. Smith is slated as president, being considered an ideal candidate for the position by reason of his business standing and ability as a promoter of corporate interests.

So as to avoid conflict with the Winton-Fournier races, booked for August 5 on the Glenville track, the Cleveland club will hardly hold a meet this season, unless it should be very late. This matter has not been decided altogether, but it is the feeling at the present time that one big attraction will be enough.

The Onwentsia Club of Lake Forest, Chicago, is planning to repeat its automobile meet of last season some time in June. An exhibition of machines in the club's garage and speed and endurance competitions will be the features.

SHOW IN BUFFALO DRAWS LARGE CROWDS OF INTERESTED CITIZENS.

Special Correspondence.

BUFFALO, March 12.—With a burst of music by the 65th Regiment band the doors of the city convention hall were thrown open Monday night to a multitude of fashionable Buffalonians who gathered to review the automobile show. This is the first show of the kind ever held in this city, admittedly one of the most progressive cities in the country in the use of the motor car as well as in its manufacture.

The immense hall which was formerly the 74th Regiment armory presented a brilliant spectacle in its gay attire. The auditorium was lavishly dressed in varied colored bunting cloth, the national colors of course predominating. From the roof hung immense streamers of bunting in the national colors, radiating from the center, while in the center was a huge rosette of the same material and colors into which was worked numberless incandescent lights. The average Buffalonian never before beheld so many and such a variety of gorgeous equipages as were presented to view, and the crowds so congested the aisles and booths that for a time it was difficult for the salesmen to show fine points of the cars on exhibition.

As is usual in affairs of this nature a number of exhibits were not in place on the opening night. This was due to the non-arrival of some of the cars for exhibition and the withdrawal at the last moment of a dozen or more concerns that had been allotted space. Several additional applications for space were received on Monday night, however, and the exposition was well filled later with up-to-date models.

The appended is a list of the concerns making exhibits up to and including Tuesday night, and which number forty-four: Knox Automobile Co., Blomgren Motor Works, Fisk Rubber Co., Diamond Rubber Works Co., Haynes, Apperson Co., Winton Motor Carriage Co., Olds Motor Works, Electric Vehicle Co., Morlock Motor Works, Ward Leonard Electric Co., Jones-Corbin Co., General Automobile Co., Baker Motor Vehicle Co., Autocar Co., Northern Automobile Co., Packard Motor Car Co., International Motor Car Co., E. R. Thomas Motor Co., Geo. N. Pierce Co., Eckhart, Twentieth Century Lamp Co., Standard Anti-Friction Equipment Co., Ripper Motor Carriage Co., Hussey Automobile Supply Co., Truscott Boat Co., Geneva Automobile Co., Cadillac Automobile Co., Centaur Motor Vehicle Co., Kirk Manufacturing Co., American Motor Co., Searchmont Automobile Co., Prescott Auto Mfg. Co., Foster Auto Mfg. Co., Buffalo Gasoline Motor Co., National Carbon Co., Buffalo Electric Carriage Co., Conrad Motor Carriage Co., National Bat-

tery, Co., T. B. Jeffrey & Co., Schaeffer Bunce & Co., O. K. Machine Co., Buffalo Tire & Rubber Co., H. H. Franklin Mfg. Co.

Many of the local automobile enthusiasts visited the New York show and some few went to Chicago, but few if, in fact, any invested in new cars preferring to wait for the local show before purchasing.

The demand for all literature bearing on the automobile was very noticeable and this is considered a good indication of the public interest taken in the vehicle locally.

Washington's Auto Show.

Special Correspondence.

WASHINGTON, D. C., March 16.—The indications are that the automobile show to be held in the Washington Light Infantry Armory the week commencing March 23 will be the largest and most important affair of the kind that has ever been held in the Capital City. Nearly every foot of space has been sold and it is more than likely that when the show opens there will not be a single stall vacant. Manager Washington states that at least thirty different makes of automobiles will be on display, which will bring the total number of vehicles exhibited up to or beyond the hundred mark. Three different makes of motor cycles, and a large number of sundry displays will also be exhibited.

Col. A. A. Pope, of Boston, has consented to open the show with an address on the subject of the automobile industry in the United States, in the course of which he will trace the history of automobile building and give facts and figures relating to the manufacture of motor vehicles. Col. Pope will be introduced by General Nelson A. Miles, president of the National Capital Automobile Club. The opening night of the show will be distinctly a society event.

It is expected that there will be a number of dealers from outside the city in attendance at the show, as the management has sent printed matter relating to the show, giving the list of machines to be exhibited, to at least five hundred dealers within a radius of four hundred miles of Washington. Many of these dealers have informed Manager Washington that they will be here during the week of the show, and it is probable that a number of agencies will be closed during the week.

Club and Dealers' Boston Shows.

Special Correspondence.

BOSTON, March 14.—A member of the New England Automobile Association Show Committee says that the recent automobile carnival in Mechanics' Hall, Boston, cost the association about \$4,500. The committee took in about \$3,000 in gate money, and the association stood for the balance. He was of the opinion that nobody was worrying about the cost of the show, since the results in demonstrating

what the auto could do and in arousing interest in the motor-car idea were well worth paying for.

This show of the club men really seems to have paved the way wonderfully well for the dealers' show, to open in Symphony Hall March 16, for one week. The local dealers were opposed to the club show at first, but at length differences were harmonized and all hands turned in—almost all, rather—to make the club show a success. The result was a considerable stir-up of popular interest, and it looks as if the bread that the dealers cast on the waters would return to them after their own show opens. Theirs will be merely a still-life exhibition, but it will have a handsome array of new model cars, whereas, by special stipulation, the club affair was devoid of all 1903 models and was not a show, really, at all, since only demonstration cars were in the hall. The Boston Dealers' Association has made a hit with its selection of the home of Boston symphony concerts for its show place, and its exhibition will probably have one or the handsomest settings of the year.

Gen. Roy Stone, the advocate of high-roads with inlaid broad steel tracks for wagons and automobiles, made an excursion over various roads in Long Island last Saturday, together with officials of the A. C. of A., in order to discover a one-mile stretch suitable for an experiment on country roads. No location was definitely selected. The tracks are to be of the same kind as those laid on Murray street in New York city, described in detail recently in these pages.

Only about twenty chauffeurs and mechanics appeared at the Central Automobile Station in N. Y. for the second meeting of the proposed operators' union. None of the temporary officers were present to call them to order and they dispersed without a formal meeting. It is apparent that the organization has gone to pieces before it was really begun owing to the lack of a leader and of sufficient enthusiasm.

President Budlong, of the National Association of Automobile Manufacturers, and President Shattuck, of the Automobile Club of America, are to hold a conference where explanations are to be exchanged as to why the Association opposes the club's projected contest for commercial automobiles and why the club made arrangements for the contest without consulting the Association.

Colors have been chosen to represent the four nations which will compete in the Gordon Bennett cup race. In compliment to Ireland, where the race will be held, English contestants will wear the emerald green, while the German colors will be white, the American red and the French royal blue. This selection has been sanctioned by the sports committee of the A. C. de France.

Legislative and Legal News.

Special Correspondence.

MINNEAPOLIS, March 12.—The right of motor cyclists to use the bicycle paths of the city has been raised here, and according to a ruling of City Attorney Healy, only the man power bicycles have a right to use the paths.

In the past motor cyclists have taken to the paths, and there is now a sentiment growing among other wheelmen that they are exceeding their right. All of the motor cyclists here have been riders of the regular wheel, and probably in a way feel they are entitled to the old privileges. Mr. Healy holds that motors are in the automobile class, and points to recent legislation, which places the two under the same restrictions in regard to speed limit and general use.

It is very probable that the city clerk will refuse to sell license tags to motor cyclists, and this would bar them from the paths. Their only redress in that case would be an appeal to the courts, and it is not improbable that such a course will be taken. In view of the city attorney's opinion an interesting legal tangle is in prospect. The defining of the rights of the motor cyclists will be of general interest throughout the country, as this question has never been raised before.

Connecticut's Automobile Toll Law.

Special Correspondence.

NEW HAVEN, CONN., March 16.—The following is the text of the proposed new law regarding fares and tolls for power vehicles, which has just been reported as a substitute measure in the Legislature, by the Committee on Roads, Rivers and Bridges, and which will probably pass:

"For power vehicles, except motor cycles, the fares and tolls of the several ferries and toll bridges shall be as follows: For power vehicles of not more than one seat (for two people), 50 per cent. more than the fares and tolls for a four-wheeled carriage and two horses; and for each additional person accompanying such power vehicles the same fare shall be charged as for additional passengers in carriages."

The ferries in the State most used by automobilists are those at the mouths of the Connecticut and Thames Rivers along the road from New York to Newport and Boston.

[Progress and Retrogression.

Special Correspondence.

HARTFORD, Conn., March 12.—At a recent meeting of the Board of Water Commissioners a request was presented asking the city to equip the watering troughs with appliances enabling motorists to fill their tanks from them. President Birmingham explained the required appliance and said the expense would be about \$40 to equip three troughs. The board voted to carry out the request of the au-

tomobilists, and gave favorable consideration to the similar equipment of two other troughs.

CONNECTICUT LEGISLATION.

The committee of public health and safety of the Legislature has not yet reported on the slow speed straight road and registration bills offered recently, and the Connecticut newspapers have extracted so much humor from these measures that Representative J. Raymond Warren, of Lyme, the father of the eight-mile and straight road bills, has become a trifle petulant and has issued the following open letter to the State press:

"So much has been said about the two bills that I introduced in the General Assembly in relation to the speed of automobiles on our country roads, I would like in fairness to myself the privilege of saying just a word. The bills which I introduced were all right for the protection of life and property on the roads in our rural sections, but they simply did not meet the demands of the automobilist. Now we protest more vigorously to the giving up of our country roads as a race course for horseless vehicles. The newspapers throughout the State have been opposed to the bills from the start. Have we no rights and privileges as law-abiding, life-long citizens? Have we no right to ask the General Assembly to grant no legislation that will protect our lives and the lives of our neighbors without ridicule from the press? It seems not. The bills introduced grant the automobilists the same rights and privileges we enjoy. I see nothing unfair in this. Some say it would destroy the pleasure of automobile riding. How about depriving thousands of women and children throughout the State their pleasure which they have enjoyed for many years; is this worth any consideration? 'Equal rights and privileges to all men' is a thing of the past. As time passes on and the unpleasant things of life are thrust upon us, we must submit, and if we have got to flee to the woods to make room for the automobile the sooner the better."

Federal Decision Affecting Trade Marks.

Special Correspondence.

WASHINGTON, D. C., March 1.—A decision recently handed down by the United States Supreme Court contains a paragraph of widespread importance to those who use trade marks. This paragraph states that where any symbol or label claimed as a trade mark is so constructed or worded as to make or contain a dis-

tinct assertion which is false, no property can be claimed in it, and the right to the exclusive use of it cannot be maintained. The opinion was written by Justice Shiras, and is regarded as having an important bearing on the operation of the patent and trade mark laws. That portion of the decision which bears directly on this particular point follows: "We find more solidity in the contention, on behalf of the appellants, that when the owner of a trade mark applies for an injunction to restrain the defendant from injuring his property by making false representations to the public, it is essential that the plaintiff should not in his trade mark, or in his advertisements and business, be himself guilty of any false or misleading representation; that if the plaintiff makes any material false statement in connection with the property which he seeks to protect, he loses his right to claim the assistance of a court of equity; that where any symbol or label claimed as a trade mark is so constructed or worded as to make or contain a distinct assertion which is false, no property can be claimed on it, or, in other words, the right to the exclusive use of it cannot be maintained."

Substitute Auto Bill in Wisconsin.

Special Correspondence.

MILWAUKEE, WIS., March 14.—The bill relating to automobiles, introduced in the Legislature by Assemblyman Moldenhauer, is likely to die hard, but that it will eventually be killed is practically assured. Motorists from all parts of the State, as well as manufacturers, were on hand nearly all week lobbying against the measure.

A few days ago the Assembly Judiciary Committee had a hearing on the bill. Attorney J. T. Drough, representing the Milwaukee Automobile Club, presented a substitute for the bill which he asked the committee to report. The original bill provides that the driver of an automobile shall stop if his machine is signaled to do so by anyone approaching with a horse, the signal being the putting up of the hand of the person driving the horse. The substitute provides "that every person in control of an automobile or motor vehicle shall, when approaching any persons riding or driving a restive horse or horses, operate such vehicle in such manner as to exercise every reasonable precaution to prevent the frightening of such horse or horses, and if necessary to prevent accident or injury, shall reduce the speed of such vehicle until such horse or horses shall have been allowed to pass, or until such horse or horses appear to be under the control of their rider or driver."

Another section of the substitute provides that any ordinance heretofore passed by any town, village or city inconsistent with this provision shall be null and void.

The committee took no action and another hearing will probably take place next week.

INDUSTRIAL

PREPARATIONS FOR TRADE AND SPORT IN NORTHERN OHIO.

Special Correspondence.

CLEVELAND, March 14.—The Winton Motor Carriage Co., although its large plant was just completed last fall, finds that it needs still more room, and next week will break ground for three additional buildings. Winton now has about completed one of the machines intended for the cup race in Ireland, but will not give any information about it. It is understood, however, that he is well satisfied as to its capabilities.

NEW WINTON RACER.

Percy Owen spent some time here studying the new Winton racer which he will use in his future contests. Mr. Winton is building duplicate machines, one of which he will use himself, while Mr. Owen will use the other. He made a careful trial of the new machine and acquainted himself with all the changes that have been incorporated in this model. So far the machine has been kept within the confines of the Winton yards and nothing has been given to the public in regard to it.

Incorporation papers have been filed for the Hansen Car Co., by R. Hansen, G. A. Gaston, M. L. Thompson, E. H. Gould and C. K. Fauver, with a capital stock of \$25,000. It is the intention to manufacture street car bodies as well as automobile bodies.

The Hoffman Automobile and Manufacturing Co. will in a short time be ready to deliver machines. Two hundred are now coming through the factory and every department is running full force to turn out a large number for early delivery. Mr. Hoffman said that there is greater demand for their gasoline machine than the steamer, and that the factory is pushing this type to accommodate customers.

L. P. Mooers, secretary of the Peerless Motor Car Co., is completing the new racing car which will be used in the Gordon Bennett cup race, providing that he qualifies at the preliminary races in New York. The car is said to have a capacity of 80 horse power, although nothing definite has been given out concerning it. However, Mr. Mooers believes that he has a machine that will prove a winner in a contest with any other built.

NEW OHIO TUBE MILL.

The United States Steel Co. has decided to erect an immense steel tube mill at Lorain, near the plant of the Lorain Steel Co. It is said the plant will be as large as the steel plant. There has been considerable speculation as to the location of the proposed plant, and other Ohio towns have been claiming it from time to time. In fact, it was once almost decided to locate it at Conneaut, but that was given up. The decision has caused a

great deal of excitement in Lorain, the activity in real estate taking on a flurry condition. It will be necessary to build another furnace or two to supply material for the new mills.

The Leisy Brewing Co., of this city, has purchased an automobile delivery wagon which will shortly be seen on the streets here. It is of the electric type and its number on the city list is 500. It is claimed the machine will run sixty miles without recharging and will carry thirty-two barrels of beer.

The police of Syracuse, N. Y., are hunting for a man who went under the name of Stearns and who claimed to be a representative of the Standard Welding Co., of this city. He opened offices in that city and paid all his bills with paper drawn on the company, which has been repudiated. The company had no such a man in its employ.

FIRST LARGE TOURING CAR IN MILWAUKEE—FACTORY NOTES.

Special Correspondence.

MILWAUKEE, Wis., March 12.—The first heavy motor car owned by a Milwaukeean has just been brought to this city and despite the fact that an ordinary light automobile is not an uncommon sight, this big machine is somewhat of a novelty. In fact it not only causes persons to stop and view it, but it actually causes gossip. The machine was purchased by George Odenbrett, of the Bates-Odenbrett Automobile Company, at the Chicago show. It is a Winton touring car of 20 horse power. It is coincident that Mr. Odenbrett was the first Milwaukee man to own an automobile (a Winton), and now he is the first person here to possess a large touring car.

Since the Bates-Odenbrett Automobile Company was organized here the concern has been very successful and many motor vehicles have been sold. The new machine will be used mainly as a sample and Mr. Odenbrett stated to your representative that he has several prospective purchasers of touring cars. The machine brought here from the Chicago show will seat five persons with comfort, or it can be used as a single-seated vehicle.

The promoters of the proposed automobile factory at Fond du Lac, Wis., came to an amicable agreement at a meeting a few days ago and elected officers. The company will be known as the Cleaver Motor Vehicle Company. The officers are: F. C. Cleaver, president; Thomas O'Brien, vice-president; George Watson, secretary; G. A. Knapp, treasurer. A board of directors was elected as follows: Robert Zinke, J. C. Fuhrman, George Watson, F. E. Cleaver and C. E. Martin.

The new company expects to secure factory room in the old yeast foam building on North Main Street, and will begin to install the necessary machinery as soon as it can be secured. J. A. Chapman, a Milwaukee machinist, will be manager of

the manufacturing plant, and according to him the concern expects to have placed ten automobiles on the market inside of three months if he is successful in getting the machinery installed in time.

The special point about the new carriage is that it can be built very light and will possess more motive power than most of the machines on the market at the present time. Mr. Chapman proposes to construct a four-seated car weighing only 900 pounds, and equipped with a gasoline engine of 10 horse power.

Articles of incorporation have been filed with the Secretary of State. The capital stock is \$20,000.

DATE SET FOR A. C. A. COMMERCIAL VEHICLE TRIALS.

The project of the Automobile Club of America for holding a contest for "commercial vehicles," in opposition to the advice of the National Association of Automobile Manufacturers, has taken more definite form. A prospectus has been issued fixing the date for the event at May 20 and 21, and the scope of the contest has been extended to include "self-propelled vehicles used for commercial purposes, made in the United States or abroad;" in other words, the contest will be international. On the first day, May 20, the vehicles are to cover the route without stops, in so far as possible, and on the second day with a specified number of stops ranging from 100 for the lighter vehicles down to 10 for the heaviest. The route will be over the streets of New York city, or, in the words of the prospectus, "The route shall be twenty miles long, consisting of a run from the club house at Fifth avenue and Fifty-eighth street, to the Battery, at the foot of Broadway; from the Battery up town and through the northern part of the city and back to the club house. Vehicles in all classes to go twice over this route (40 miles) on each day of the contest."

The contestants are to furnish their own material for loading their vehicles and have free choice in this respect, and the contest committee in addition will supply ballast in convenient form to make up deficiencies in the required loads.

There will be three divisions, in electric, steam and gasoline vehicles, each of four classes. Class 1 in each division will include vehicles intended to carry a dead load of up to 750 pounds, class 2 2,000 pounds, class 3 3,500 pounds and class 4 10,000 pounds. The first two classes are to make 100 specified stops on the first day, class 3 twenty such stops and class 4 ten stops. The electric division will be allowed three hours for recharging batteries and the steam division thirty minutes for taking water. The cost of operation per ton-mile will be ascertained for each vehicle, and medals will be awarded based on economy in cost of operation and time consumed in cover-

ing the route "within the legal limit of eight miles per hour." Certificates will also be given by the club stating the performance of each vehicle. The medals will be given in four sets of three, namely a gold, a silver and a bronze medal to each class, so that the electric, steam and gasoline vehicles will compete against each other, while two vehicles of the same general type but differing in capacity will not be brought in competition.

The Contest Committee announces that the rules and regulations for the contest will be issued later.

MOTOR BUILDING IN SYRACUSE—HER TOURING AND RACING CARS.

Special Correspondence.

SYRACUSE, N. Y., March 14.—The first machine made by the J. S. Leggett Manufacturing Company has been seen on the streets and seems to be a success. It is the invention of George DeLong, formerly of New York, who also invented the DeLong motor cycle. The motor is four-cylinder, water-cooled, of 15 horse power upright, and placed in front. The car has a seating capacity of two, four or six. The tonneau is easily detached, and when it is taken off a part of the sill is removed, making a good looking run-about. It is upholstered in leather, finished in dark green with wine-colored running gear. The weight with tonneau is 1,300 pounds. The wheels are of artillery type, 30-inch, with 3 1-2-inch clincher tires. The car will run 100 miles on one filling of gasoline and water, the tanks each holding about ten gallons. The first machine has already been sold.

John Wilkinson, engineer for the H. H. Franklin Manufacturing Company, formerly a noted bicycle racer, is out after racing honors, and will compete with Winton, Fournier and the other fast mororists. For this purpose he will drive the big machine which is being turned out by the Franklin Company for Alexander T. Brown. It is of the ordinary racing type, more than nine feet long, and will weigh something over 2,000 pounds. The big machine, which is the outcome of the ideas of both Mr. Brown and Mr. Wilkinson, will combine the racing and touring types. When fitted for touring it will seat six passengers; this body can be replaced by a low, light body with a single seat for racing. The enormous horse power is developed by an upright four-cylinder motor in front. The machine has something new in the way of a shaft drive, which does away with the chain. A pointed hood will cover the front.

Auto Outlook in Springfield.

Special Correspondence.

SPRINGFIELD, Mass., March 12.—Automobiling in Springfield and vicinity during the approaching season gives promise of attaining popularity to an extent which was not even guessed at several years ago,

and the several automobile manufactories and dealers are laying plans and providing for unusually large sales. Judging from present indications nearly 100 automobiles will be sold in Springfield this season, and the Automobile Club is looking forward to a prosperous summer and fall.

Anticipating a large business during the approaching season on account of the growing popularity of the automobile, A. A. Geisel, manager of the Dwight Street garage, is planning an addition to the present structure of 4,000 square feet of floor surface.

The Electric Storage Battery Company of Philadelphia is to establish a branch in the Dwight Street garage and will be in a position to repair all electric machines.

Jersey Passes 20 Mile Law.

After considerable discussion in both the House of Assembly and the Senate of New Jersey the Scovel Automobile Bill was this week enacted as a law in its original form, the proposed amendments being rejected. It allows 20 miles per hour in the open country, to be reduced to 10 miles at crossroads and on curves, and 8 4-7 miles per hour in city streets. That is, these speeds are the highest permitted under any circumstances, but the fact that an automobilist has kept within them in a given instance does not relieve him of responsibility, civil or criminal, if it may be shown that he was to blame, his observation of the speed limits notwithstanding.

Makers of "Santos Dumont" Re-organized.

Special Correspondence.

COLUMBUS, O., March 14.—The Columbus Motor Vehicle Co. has been entirely reorganized. The officers of the company are William Frisbe, president; J. J. Brown, vice president; W. C. Anderson, secretary; Yeatman Wardlow, treasurer, and J. F. Runkle, general manager.

Their machine is called the Santos Dumont, and was described recently in these columns in connection with the Chicago show, where it was exhibited and attracted favorable attention.

Incorporation papers for the Remington Automobile and Motor Company, which was reorganized in Utica, N. Y., recently, have been filed with the Secretary of State at Albany. The new company is organized under the laws of the State of New York, with a capital stock of \$100,000, of which \$50,000 is preferred and the rest common. The shares are \$50 each. Philo E. Remington, of Ilion, and O. S. Foster and W. H. Owen, of Utica, are the incorporators. These officers and directors have been chosen for the first year: President, John B. Wild; General Manager, W. H. Owen; Directors, O. S. Foster, J. B. Wild, W. H. Owen, L. M. Graham, A. E. Omens, Charles Xardell and A. J. Baechle.

DAYTONA BEACH RACES ABANDONED IN A HUFF.

Arrangements for automobile races on the beach between Daytona and Ormond on the east coast of Florida were progressing very satisfactorily until March 11, when the Florida Automobile Association, in charge of the event, discovered that there was more business back of the project than it could stomach and also that the American Automobile Association had not given its sanction to the races, as previously supposed. It then dropped the whole affair incontinently and, as it seems, greatly disgusted for having unwittingly been placed in what its officers considered an unsportsmanlike position. Explaining its position the Association's secretary, Mr. F. P. Hoover, wrote to the *Evening Metropolis*, of Jacksonville, as follows:

The Florida Auto Association would prefer a full statement of the transactions of their meeting the evening of March 11 be published, in order that the association be not placed in a false light to the public by the action they took in relation to the Daytona races. The association is complying with the rules of the Automobile Association of America, only that and nothing more.

The Florida Automobile Association had a largely attended meeting in the Board of Trade rooms last Wednesday evening. Between forty and fifty members were present, among whom were: Messrs. D. T. Gerow, Capt. C. E. Garner, W. F. Coachman, Maj. Gumbinger, J. E. T. Bowden, Senator A. S. Mann, F. T. Cullens, A. G. Hartridge and R. V. Covington. The committee on transportation reported an interview they had with Mr. J. P. Beckwith, of the Florida East Coast Railroad, in regard to rates for man and machines to Daytona for the races. Mr. Beckwith refused a rate of any kind to passengers, but for machines a rate of \$5 each way was made. The owner of the machine, however, had to put it on and take it off the train, the railroad assuming no responsibility. The committee were also informed that Mr. W. J. Morgan, who was the promoter of the Florida Automobile Association, was in the employ of the Florida East Coast for the working up of the Daytona race meet in the interest of the Florida East Coast Railroad. It was regularly moved and seconded that the Florida Automobile Association retire at once from any further connection with races to be held in Daytona, March 26; that the secretary so notify the Daytona and Seabreeze Association, and others who have become interested in the meet, both in and outside of the State; also to notify the gentlemen in this city who have donated cups, viz.: Greenleaf & Crosby and R. J. Riles and Mr. F. E. Gilbert, who had donated a handsome brass auto lamp, which were to be contested for in Daytona, March 26 to 28, to withdraw their prizes and thank them for the tender of same.

The Florida Auto Association has been under the impression, until a few days ago, that arrangements had been made for the races, and when information came to the contrary, and the secretary was unable to reach Mr. W. J. Stewart, chairman of the racing committee of the Automobile Association of America, to secure a permit to run the races on Daytona-Ormond beach, that they could not hold the races according to the laws of the Automobile Association of America, it was deemed advisable for the best interests of the Florida Automobile Association to sever all connection with the meet.

F. P. HOOVER, Secretary.